Ministry Of Higher Education
And Scientific Research
Scientific Supervision And Evaluation Device
Department Of Quality Assurance And
Academic Accreditation
Accreditation Department

Academic Program And Course Description Guide

2024

Introduction:

A curriculum is a coordinated and organized package of courses that includes procedures and experiences arranged in a syllabus, the primary purpose of which is to build and refine the skills of graduates to make them qualified to meet the requirements of the labor market. It is reviewed and evaluated annually through internal or external audit procedures and programs, such as the external examiner program.

The academic program description provides a concise summary of the key features of the program and its courses, indicating the skills that are being developed for students based on the program's objectives. The importance of this description is evident as it represents the cornerstone of obtaining program accreditation, and it is written by the teaching staff under the supervision of the scientific committees in the scientific departments.

This guide in its second edition includes a description of the academic program after updating the terms and paragraphs of the previous guide in light of the latest developments and changes in the educational system in Iraq, which included a description of the academic program in its traditional form (annual, semester) system, as well as adopting the generalized academic program description according to the letter of the Directorate of Studies No. T3/2906 on 5/3/2023 for programs that are based on the Bologna Process.

In this context, we cannot but emphasize the importance of writing descriptions of academic programs and courses to ensure the smooth running of the educational process.

Concepts and Terminology:

Academic Program Description: The academic program description provides a concise summary of its vision, mission, and objectives, including a precise description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a concise summary of the key characteristics of the course and the expected learning outcomes that the student is expected to achieve, demonstrating whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture of the future of the academic program to be a developed, inspiring, motivating, realistic, and applicable program.

Program Mission: It clarifies the goals and activities required to achieve them concisely and also defines the program's development paths and directions.

Program Objectives: These are statements that describe what the academic program intends to achieve within a specific time frame and are measurable and observable.

Curriculum Structure: All courses/subjects included in the academic program according to the adopted learning system (semester, annual, Bologna process), whether they are requirements (Ministry, University, College, and Scientific Department) with the number of credit units.

Learning Outcomes: A coherent set of knowledge, skills, and values that the student has acquired after successfully completing the academic program. Learning outcomes must be defined for each course in a way that achieves the program's objectives.

Teaching and Learning Strategies: They are the strategies used by the faculty member to develop student teaching and learning. They are plans that are followed to achieve learning objectives. It describes all classroom and extracurricular activities to achieve the learning outcomes of the program.

Academic Program Description Template

University Name: Al-Qasim Al-Khader University

College/Institute: College of Food Sciences

Department: Dairy Science and Technology Department

Academic or Professional Program Name: Academic Program and Course Description Guide

Final Degree Name: Bachelor of Science in Food Science

Study System: Semester

Description Preparation Date: 05/03/2024

File Completion Date: 05/03/2024

ignature:

Name of the scientific assistant: Prof. Dr. Haider Shahd Wahd

Date:

Signature:

Name of Head of Department: Prof. Dr. Qaisar Hamad Gabe

Date:

Quality Assurance and University Performance Department Approval

Department: Quality Assurance and University Performance Department

Name of Director of Quality Assurance and University Performance Department

Dr. Mustafa Muhammad Kazim

Date:

Signature:

Dean's Approval

1. Program Vision:

The Department of Dairy Science and Technology was established starting from the academic year 2013-2014. The period of study in the college is four years. The graduate student is granted a bachelor's degree in food science. Graduates of the preparatory study of the scientific branch are accepted for both sexes. The graduate is prepared to work in scientific bodies and institutions working in the field of dairy and food science and technology to develop the reality of local production in this field .

2. Program Mission

Providing a good educational service in terms of undergraduate and graduate studies and developing academic and applied research, whether on scientific degrees or solving manufacturing problems, in addition to the guiding role of service and development of work in the field of dairy science and technology. Thedepartment's activity extends in addition to the educational process in other fields, including conducting scientific research, developing appropriate proposals to solve problems related to the field of dairy technology, holding training courses at the local and regional levels, holding scientific conferences in cooperation with the relevant local authorities and foreign universities, and joint supervision of research projects, in addition to preparing some solid scientific references for dairy science and technology.

3. Program Objectives:

- Preparing specialists and researchers to work in scientific bodies and institutions, government and private factories, laboratories and research centers that work in various fields of dairy science and technology.
- Conducting applied research to solve manufacturing problems and improve the quality of production at work in factories and companies working in the field of food processing and preservation.
- Holding training and guidance courses to raise the scientific and practical efficiency of workers in the field of dairy science and technology.
- Providing specialized scientific consultations and appropriate solutions to the problems facing food processing in our beloved country.
- Holding scientific conferences and seminars specialized in the field of food and dairy science and technology and cooperating with local, regional and international scientific bodies through the establishment of scientific seminars and training courses in the field of dairy science and technology.
- Contribute to the preparation and provision of scientific references in Arabic and English on topics related to dairy science and technology

4. Program Accreditation

Does the program have programmatic accreditation? Yeah, where from?

No

5. Other External Influences

Is there a program sponsor?
No

6. Program Organization

The structure of the Education Programme is as follows:	Number of resolutions	study unit	Percentage	Notes
Organization Requirements	4	13	416	
Faculty Requirements	2	5	083	
Department Requirements	22	222	92.5%	
summer training				
Other				

* It can include notes on whether the course is basic or optional.

7. Course Details

Year/Level	Course Code	Course Title	Credit Hours	
			Theoretical	Practical
First/First	DST11001	Arabic Language	2	–
First/First	DST11002	Analytical Chemistry	2	2
First/First	DST11003	Mathematics	2	–
First/First	DST11004	Foundations of Engineering Workshops	2	2
First/First	DST11005	Human rights and democracy	2	–
First/Second	DST12006	Life Chemistry	2	2
First/Second	DST12007	Principles of Food Processing	2	2
First/Second	DST12008	Dairy plant engineering	2	–
First/Second	DST12009	Mabadi Dairy	2	2
First/Second	DST12010	Microbiology	2	2
Second/First	DST23111	Life Chemistry	2	2
Second/First	DST23012	Principles of Food Processing	2	2
Second/First	DST23113	Dairy plant engineering	2	–
Second/First	DST23014	Mabadi Dairy	2	2

Second/First	DST23015	Microbiology	2	2
Second/Second	DST24116	Computer applications in manufacturing units	2	2
Second/Second	DST24017	Physical Chemistry	2	2
Second/Second	DST24118	Microdairy revival	2	2
Second/Second	DST24119	Manufacture of liquid and powdered milk	2	2
Second/Second	DST24020	English	2	–
Third/First	DST35021	Quality control and quality control of dairy products	2	2
Third/First	DST35022	Economics and Marketing of Dairy Products	2	–
Third/First	DST35123	Dairy Chemistry	2	2
Third/First	DST35124	Enzyme Science	2	2
Third/First	DST35125	Technology of initiators and fermenters	2	2
The third, second and first…	DST36126	Manufacturing by thermal and non-thermal treatments of dairy	2	2
The third, second and first…	DST36127	Fatty Dairy Products	2	2
The third, second and first…	DST36128	Human Nutrition	2	–
The third, second and first…	DST36129	Food Processing	2	2
The third, second and first…	DST36130	By-products and environmental contaminants of dairy products	2	2
Fourth/First	DST47131	Cheese Processing	2	2
Fourth/First	DST47032	Research Methodology	2	–
Fourth/First	DST47133	Packaging	2	–
Fourth/First	DST47034	Professional Ethics	2	–
Fourth/First	DST47135	Evaluate and develop dairy products	2	2
Fourth/Second	DST48136	Manufacture of special milk and milk novelties	2	–
Fourth/Second	DST47137	"Nanomedical Applications."	2	2
Fourth/Second	DST47138	Food analysis	2	2
Fourth/Second	DST47139	Ice Cream Industry	2	2

Fourth/Second	DST47140	Graduation Research Project	–	2

8. Expected learning outcomes	
Knowledge	
1-Enabling students to obtain knowledge and understanding of the intellectual and skill framework of dairy science and technology. 2- Enabling students to obtain knowledge of food and dairy processing methods. 3- Enabling students to obtain knowledge of microorganisms in dairy and how to deal with them. 4- Enabling the student to obtain knowledge of the components of healthy and proper food. 5- Enabling students to obtain knowledge of dairy technology from cheese and fatty substances. 6-Enabling students to obtain knowledge of the global laws adopted in food safety	1-The student should know the basics of the required sciences. 2- The student must understand the required scientific details. 3- The student should analyze the scientific developments.
Skills	
1- Enabling students to solve problems related to dairy processing. 2- Enabling students to solve problems related to the manufacture of dairy products of cheese and fatty substances 3- Enabling students to solve problems related to microorganisms in dairy and how to deal with them. 4- Enabling students to solve problems related to dairy pollution. 5- Enabling students to solve problems related to the manufacture of ice cream and others. 6- Enabling students to solve problems resulting from overlapping production units lines. 7- Enabling students to solve problems related to control units in food and dairy factories 8- Enabling students to solve problems related to preserving food and dairy 9- Enabling students to solve problems related to food and dairy packaging	1- Good knowledge of the principles of dairy science and knowledge of modern technologies such as nanotechnology applications 2- Technical ability in the field of his work and monitoring vital conditions.
(Field and Laboratory Studies) Graduates are capable of laboratory experiments and field studies by using scientific requirements and computer techniques while observing the properties of the protection system.	1- Except for a good knowledge of scientific terms in his field of specialization. 2- Except for the good knowledge of theEnglish language.
Values	
(Scientific Knowledge) Graduates are able to demonstrate balanced concepts to develop their scientific knowledge, study all changes in dairy products within the vocabulary of food analysis and learn about modern technologies such as nanotechnology applications.	1- Commitment to a brother or sister whodoes not meet the requirements of the university institution. 2-Receiving information and knowledge acceptance.
′est Result» Graduates are able to demonstrate quantitative scientific skills such as the ability	1- Commitment to a brother or sister whodoes not meet the requirements of the university institution.

to correlate the analysis of results.	2-Receiving information and knowledge acceptance.

9. TEACHING AND LEARNING STRATEGIES

1. Teaching inside classrooms through theoretical and practical lectures.
2. Learning through workshops, seminars and training courses related to the dairy industry .
3. Preparing reports and scientific research.

10. Evaluation methods

1- The

2- Preparing and discussing research.

3- Reporting

4- Attendance and daily activities.

11. TEACHING PERSONNEL

Faculty members

Academic rank	Major		Special Requirements/Skills (if applicable)		TEACHING PERSONNEL	
	General	Private			Malak	Lectrurer
Professor	Food Science	Dairy Chemistry			Jassim Muhammad Ayoun	
Assistant Professor	Food Science	Dairy Manufacturing			Diaa Ibrahim Al-Badrani	
Assistant Professor	Food Science	Biotechnologies			Sadiq Zia Mounir	
Assistant Professor	Mechanical Engineering	Trapulge			Haider Shahd Wahd	
Lecturer	Chemistry	Organic Chemistry			Ahmed Karim Obaid	

Assistant Professor	Food Science	Dairy Chemistry			Caesar Hamad Gabe	
Lecturer	Mechanical Engineering	Applied Mechanics			Mustafa Mohammed	
Lecturer	Chemistry	Nano−physical chemistry			Ali Ibrahim Shakhir	
Lecturer	Food Science	Microbiology			Mustafa Ali Kazem	
Demonstrator, Department of Information and Educational Technology, Faculty of Education, Dakahlia, Al-Azhar University	Food Science	Dairy Technology			Ashwaq Kazem Rahi	
Demonstrator, Department of Information and Educational Technology, Faculty of Education, Dakahlia, Al-Azhar University	Materials Engineering	Laboratory Engineering			Sarah Karim Nayef	
Demonstrator, Department of Information and Educational Technology, Faculty of Education, Dakahlia, Al-Azhar University	Agriculture	Animal Production			Sarah Mounir Abbas	
Demonstrator, Department of Information and Educational Technology, Faculty of Education, Dakahlia, Al-Azhar University	Food Science	Dairy Technology			Diaa Hilfeh Kazem	
Demonstrator, Department of Information and Educational Technology, Faculty of Education, Dakahlia, Al-Azhar	Chemistry	Analytical Chemistry			Maha Salah Nasr	

University						
Demonstrator, Department of Information and Educational Technology, Faculty of Education, Dakahlia, Al-Azhar University	Life Sciences	Medical Microbiology			Zahraa Abdul Mahdi Majbas	

Professional Development

(New faculty members)

T He advised the new faculty members of the need to work on the development of the scientific method, the methods of delivering the scientific lecture and how to deliver the practical material to the student

Professional development of teaching staff:

Work on the establishment of training courses and workshops to develop expertise for faculty members.

12. Acceptance Criteria

Graduates of the preparatory school /scientific branch are accepted in the Department of Dairy Science and Technology.

13. The most important sources of information about the program

1 Textbooks approved by the Ministry of Higher Education and Scientific Research.
2- External scientific sources.
3- Using libraries and the Internet.

14. Program Development

The department prepares methodological and research plans for the development of the department, which are prepared by the department presidency, the scientific committee and the department council

Program Skills Chart															
				البرنامج من المطلوبة التعلم مخرجات											
المستوى / السنة	Course Code	Course Name	Basic or Optional	Knowledge				Skills				Values			
				A1:	A2:	3	A4	B1	B2	B3	B4.	A1	A2	A3	A4
First/First	DST11001	Arabic Language	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST11002	Analytical Chemistry	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST11003	Mathematics	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST11004	Foundations of Engineering Workshops	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST11005	Human rights and democracy	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
First / Second	DST12006	Life Chemistry	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST12007	Principles of Food Processing	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST12008	Dairy plant engineering	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST12009	Mabadi Dairy	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST12010	Microbiology	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Second/First	DST23111	Life Chemistry	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

	DST23012	Principles of Food Processing	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST23113	Dairy plant engineering	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST23014	Mabadi Dairy	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST23015	Microbiology	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Second/Second	DST24116	Computer applications in manufacturing units	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST24017	Physical Chemistry	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST24118	Microdairy revival	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST24119	Manufacture of liquid and powdered milk	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST24020	English	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Third/First	DST35021	Quality control and quality control of dairy products	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST35022	Economics and Marketing of Dairy Products	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST35123	Dairy Chemistry	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

	DST35124	Enzyme Science	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST35125	Technology of initiators and fermenters	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
The third, second and first...	DST36126	Manufacturing by thermal and non-thermal treatments of dairy	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST36127	Fatty Dairy Products	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST36128	Human Nutrition	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST36129	Food Processing	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST36130	By-products and environmental contaminants of dairy products	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fourth/First	DST47131	Cheese Processing	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST47032	Research Methodology	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST47133	Packaging	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST47034	Professional Ethics	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST47135	Evaluate and develop dairy products	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Fourth/Second	DST48136	Manufacture of special milk and milk novelties	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST47137	"Nanomedical Applications."	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST47138	Food analysis	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST47139	Ice Cream Industry	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DST47140	Graduation Research Project	Basic	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Course Name

Food and dairy plant engineering

Course Code: DST23113

Term / Year: First :Second

Date of preparation of this description: 3/5/2024

Available Attendance Forms: Classroom Attendance

- **Number of study hours (total) / 4**
  Number of units (total) 2

Name of course administrator (if more than one name is mentioned)

Name: Dr. Mustafa Mohammed Kazem/ **Email:** mustafa_almansoori86@fosci.uoqasim.edu.iq

Eng. Sara Karim Nayef

Course Objectives

- Introduce the student to the most important manufacturing units in food and dairy factories by studying the engineering processes that occur within these units such as material and energy balance, heat, steam generation, cooling and freezing and other processes.
- Introduce the student to how to work on all engineering devices of manufacturing units in food and dairy factories by studying their different parts and types.
- Introduce the student to how to measure and control all engineering variables that occur in devices in manufacturing units.
- Introducing the student to the most important basics of designing food and dairy laboratories.

Objectives of the unit	1. During the study of the engineering processes that occur within these units such as the balance of matter and energy, heat, steam generation, cooling and freezing and other processes. 2. Introduce the student to how to work on all engineering devices of manufacturing units in food and dairy factories by studying their different parts and types. 3. Introduce the student to how to measure and control all engineering variables that occur in devices in manufacturing units. 4. Introducing the student to the most important basics of designing food dairy laboratories.

1. Teaching and Learning Unit

Strategy	The following learning and teaching strategies are adopted throughout this curriculum: • Encouraging students to participate in solving problems and making calculations for the curriculum. • Improve critical thinking skills and enrich it at the same time. • Develop evaluation questions at the end of each lecture to assess the level of learning of students. • Using the students' brainstorming strategy to increase focus and keep abreast of the lecture. • Using educational videos that increase students' knowledge

2. Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Manufacturing Units and Work Units		Presence	- Homework.
2	2	Matter Balance and Energy Balance		Presence	- Homework.
3	2	Heat, its types and methods of measuring heat		Presence	- Homework.
4	2	Methods of heat transfer and control		Presence	- Homework.
5	2	Steam generation and its types Steam applications in food and dairy factories		Presence	exam
6	2	Thermal treatment of food and dairy materials by pasteurization		Presence	- Homework.
7	2	**Midterm Exam**		Presence	exam
8	2	Thermal treatment of foodstuffs and dairy products by sterilization		Presence	- Homework.
9	2	Refrigeration Systems and Refrigeration Hardware Components		Presence	- Homework.
10	2	Refrigeration calculations in food and dairy laboratories		Presence	exam
11	2	Freezing systems and components of freezers and its calculations in food and dairy laboratories		Presence	- Homework.
12	2	Pumping and its uses in food and dairy factories		Presence	- Homework.
13	2	Metals and alloys used in the manufacture of appliances and equipment in food and dairy factories		Presence	- Homework.
14	2	Use of electrical energy in food and dairy factories		Presence	- Homework.
15	2	Electric power		Presence	- Homework.

3. Course Evaluation

Module Evaluation

REVIEW COURSE

	As	number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10:10	5 and 11.	All
	Assignments	2	10:10	6 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	1-15	All
Summative assessment	**Midterm Exam**	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
		Total assessment	100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

4. Learning and Teaching Resources	
Required course books (methodology if any)	Engineering of food and dairy laboratories by Dr. Amer Hamid Sa Al-Dahan 1981.
Key References (Sources)	Thermodynamic an Engineering Approach, Yuns A. Cengel, 2006
Recommended books and supporting references (scientific journals, reports……..)	
Electronic references, websites ,…..	

Course Name
Principles of Dairy
Course Code: DST23014
Term / Year : First :Second
Date of preparation of this description: 3/5/2024
Available Attendance Forms: Classroom Attendance
• **Number of study hours (total) / 4** **Number of units (total) 2**
Name of course administrator (if more than one name is mentioned)
Name: Dr. Eng. Diaa Ibrahim Al-Badrani/ **Email:** dhiaalarabi@ fosci.uoqasim.edu.iq
Course Objectives

Objectives of the unit	1-Identifying the importance of the course in scientific and practical terms. 2-Teaching the student the nutritional value of milk and milk products. 3-The student learns the components of milk and its products and the percentage of these components. 4-Teaching the student the exact chemical composition of milk ingredients and products. 5-Teaching the student the devices and chemicals used in the manufacture of dairy products. 6-Teaching the student the methods of manufacturing ice cream and dairy products. 7-Teaching the student modern methods and means in the dairy industry.

Teaching & Learning	
Strategy	is to encourage students' participation in exercises, while at the same time improving and expanding their critical thinking skills. This will be achieved through classroom and interactive tutorials and by looking at the types of simple experiments that include some sampling activities that are of interest to students.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Introduction and Introduction to		Presence	- Homework.

		the Curriculum			
2	2	Nutritional value of dairy products		Presence	- Homework.
3	2	Nutritional value of dairy products		Presence	- Homework.
4	2	The economic importance of milk and milk products		Presence	- Homework.
5	2	Diseases transmitted by milk		Presence	- Homework.
6	2	Ingredients for milk		Presence	- Homework.
7	2	exam		Presence	exam
8	2	Protein and Lactose Sugar		Presence	- Homework.
9	2	Water and fatty substances		Presence	- Homework.
10	2	Vitamins and Lactose Sugar		Presence	exam
11	2	Enzymes and Salts		Presence	- Homework.
12	2	Physical Properties		Presence	- Homework.
13	2	Physical Properties		Presence	- Homework.
14	2	Factors affecting the quantity, composition and quality of milk		Presence	- Homework.
15	2	Milk Heat Treatments		Presence	- Homework.
16	2	exam			exam

Course Evaluation

Module Evaluation
REVIEW COURSE

	As	number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	Midterm Exam	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
	Total assessment		100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Principles of Dairy Processing
Key References (Sources)	
Recommended supporting books and references (scientific journals, reports……)	
Electronic references, websites ,…..	http://repository.ottimmo.ac.id/38/1/Dairy % 20Science% 20and %20Technology %20% 28CRC%202005% 29.pdf

1. Course Name

Computer applications in manufacturing units

Course Sign :

DST24116

2. Term / Year: First: Second

3. Date of preparation of this description: 3/5/2024

4. Available Attendance Forms: Classroom Attendance

- **Number of study hours (total) / 4**
  Number of units (total) 2

5. Name of course administrator (if more than one name is mentioned)

Name: Dr. Mustafa Mohammed Kazem **/ Email:** mustafa_almansoori86@fosci.uoqasim.edu.iq

Course Objectives

1. Learn how to convert modules from one module system to another.
2. Calculating food quantities using the USDA program.
3. Calculation of the physical and thermal properties of foodstuffs.
4. Calculating the cooling load in food and dairy factories.
5. Calculating the freezing capacity and the time required to freeze foodstuffs and its program.
6. Familiarize yourself with the design of steam boilers.
7. Identify heat transfer methods and programs.

8. Working on programs to calculate the growth of microorganisms in food and dairy. 9. Working on Excel programs to perform calculations in food and dairy engineering.	
Objectives of the unit	• Teaching the student to use a computer in designing food processing equipment. • Conducting engineering calculations and developing food processing through the possibility of conducting studies of various factors. • Teaching the student computer management in the Excel program and writing programs and running them through it. • Introduce the student to how to measure and control all engineering variables that occur in devices in manufacturing units. • Introducing the student to the most important basics of designing food and dairy laboratories.

6. Teaching & Learning

Strategy	The following learning and teaching strategies are adopted throughout this curriculum: Encouraging students to participate in solving problems and making calculations for the curriculum. Improve critical thinking skills and enrich it at the same time. Develop evaluation questions at the end of each lecture to assess the level of learning of students. Using the students' brainstorming strategy to increase focus and keep abreast of the lecture. Using educational videos that increase the knowledge of students.

7. Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Duty Unit Conversion		Presence	- Homework.
2	2	Using the USDA program to know the components of foodstuffs		Presence	- Homework.
3	2	Using the Food Physical Thermal Properties Calculator		Presence	- Homework.
4	2	Using software Calculating cooling load		Presence	- Homework.
5	2	Using software Calculating cooling load		Presence	- Homework.
6	2	Steam Boiler Design Program		Presence	- Homework.
7	2	Heat Transfer Calculation Software		Presence	- Homework.
8	2	Heat Transfer Calculation Software		Presence	- Homework.
9	2	OPT-PROX Canned Food Thermal Process Calculation Program		Presence	- Homework.
10	2	Excel Applications in Food Engineering		Presence	- Homework.
11	2	Excel Applications in Food Engineering		Presence	- Homework.
12	2	Excel Applications in Food Engineering		Presence	- Homework.
13	2	Excel Applications in Food Engineering		Presence	- Homework.
14	2	Microorganism Loss and		Presence	- Homework.

		Growth Program			
15	2	Microorganism Loss and Growth Program		Presence	exam
16	2	**A week of preparation before the final exam**		Presence	exam

8. Course Evaluation

Module Evaluation REVIEW COURSE					
As		**number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10:10	5 and 11.	LO #1- #4 and #7 - #10
	Assignments	2	10:10	6 and 12.	LO #3, #4 and #9, #10
	Projects	1	10:10	continuous	All
	Report	1	10:10	1-15	All
Summative assessment	**Midterm Exam**	2hr	10:10	7	1-7
	Final Exam	3hr	%50 %50	16	All
	Total assessment		100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

9. Learning and Teaching Resources

Required course books (methodology if any)	Computer Applications in Food Engineering, Asaad Rahman Saeed Al-Halfi, 2012
Key References (Sources)	Thermodynamic an Engineering Approach, Yuns A. Cengel, 2006
Recommended books and supporting references (scientific journals, reports……..)	
Electronic references, websites ,.....	

Course Name

Physical Chemistry

Course Sign :

DST24017

Term / Year: First :Second

Date of preparation of this description: 3/5/2024

Available Attendance Forms: Classroom Attendance

- **Number of study hours (total) / 4**
  Number of units (total) 2

Name of course administrator (if more than one name is mentioned)

Name: Ahmed Karim Obaid/ **Email:** ahmedaldulaimi1@gmail.com

Course Objectives

1. Understand basic concepts: The primary goal of teaching physical chemistry is to ensure that students have a solid understanding of basic concepts such as states and laws of matter.

2. The student should be able to plan and implement the properties of solutions, install solutions, prepare diluted solutions of concentrated solutions and theories of osmotic pressure and their association with the food industries.
3. The student should be able to plan and implement oxidation and reduction reactions and the rate of the chemical reaction and the factors affecting it.
4. Students should be able to plan and implement molecular polarity and molecular interaction.
5. Integrate the basic concepts that describe the traditional core topics of physical chemistry.

Objectives of the unit	– Teaching students the states and laws of matter, natural, molar, and molar, and how to – Demonstrate the importance of measuring solution concentration, solubility, influencing factors, oxidation and reduction reactions, polarity and molecular interaction. – Teaching and educating students on all necessary information related to physical chemistry, which qualifies them to work and research in all fields of physical chemistry.

Teaching and Learning Unit

Strategy	• Lecture style and use of interactive whiteboard. • Demonstration Provide students with additional basics and topics related to chemical thinking outputs. • Forming discussion groups during lectures to discuss physical chemistry topics that require thinking and analysis. • Ask students a set of reflective questions during lectures such as what, how, when, and why for specific topics. • Give students homework that requires self-explanation in causal ways.

2. Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Introduction to the history of physical chemistry and the states and laws of matter.		Presence	- Homework.
2	2	Examples of Calculations Involving Normal, Molar, and Molar States		Presence	- Homework.
3	2	Solutions: General Properties and Installation of Solutions		Presence	- Homework.
4	2	Solutions: Measuring the concentration of the solution, and the types of solutions.		Presence	- Homework.
5	2	Solubility and factors affecting solubility		Presence	- Homework.
6	2	canteen		Presence	- Homework.
7	2	Preparation of diluted solutions of concentrated solutions and theories of osmotic pressure and their relationship to the food industry.		Presence	- Homework.
8	2	Midterm Quiz		Presence	exam
9	2	the redox reactions to occur.		Presence	- Homework.
10	2	canteen		Presence	exam
11	2	Particle polarity		Presence	- Homework.
12	2	The rate of chemical reaction		Presence	- Homework.

		and the factors affecting it			
13	2	canteen		Presence	- Homework.
14	2	Molecular Interaction: Types and Factors Affecting It		Presence	- Homework.
15	2	final exam		Presence	exam

3. Course Evaluation

Module Evaluation
4. Course Evaluation

As		number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	10	2,3, 5,9, 11	3 and 4.
	Assignments/lab	2	5	5 and 9	5
	Projects	2	5	10 and 42	4
	Report/Lab	10	10	All experiments	3, 4 and 5
Summative assessment	Midterm Exam	1	20	8	Ibid., p. 3.
	Final Exam	1	50	15	1, 2, 3, 4, 5, 6...
Total assessment			100		

5. The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

6. Learning and Teaching Resources

Required course books (methodology if any)	Physical Chemistry by Dr. Mustafa Ohag Mohamed General Physical Chemistry by Dr. Omar Abdullah Al-Hazazi
Key References (Sources)	
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	Physical chemistry - Wikipedia

Course Name

Manufacture of liquid and powdered milk

Course Code: DST24119

Term / Year : First :Second

Date of preparation of this description: 3/5/2024

Available Attendance Forms: Classroom Attendance

- **Number of study hours (total) / 4**
  Number of units (total) 2

Name of course administrator (if more than one name is mentioned)

Name: Prof. Dr. Qaisar Hamad Gabe/ **Email:** qayssarhamad@fosci.uoqasim.edu.iq

Course Objectives

-Qualifying dairy science students with a broad knowledge of liquid and powdered milk production techniques so that the graduate can employ that knowledge in the field of food and dairy .

- Qualifying students of the Department of Dairy and Food Sciences to be familiar with the theoretical and practical aspects of liquid milk technology as one of the basic sciences in food and dairy sciences
Acquiring a wide knowledge and skill in the technique of producing liquid and powdered milk so that the graduate can employ those knowledge and skills in the field of food science

- Ability to acquire modern methods of learning, evaluation and critical thinking
Ability to manage environmental projects, oral and written communications, work within the environmental team, and the skill of presenting results in guidance or in environmental health seminars and conferences

- The student has acquired the necessary skill to work on and manage all devices and equipment for the production of liquid milk and its products.

Objectives of the unit	1. The student should be familiar with the basic components of milk. 2. The student should learn about the physiochemical qualities of milk and the factors that affect the components of milk. 3. The student learns about the defects and adulteration of milk 4. The student should be able to process milk in the collection centers and in the dairy factories 5. The student should be familiar with the thermal coefficients of milk. 6. The student learns how to produce condensed and sweetened milk 7. 7The student learns how to produce fermented milk 8. The student learns about powdered milk 9. The student should know the basic processes of drying milk. 10. The student should know the basic processes of drying milk . 11. The student shall be familiar with and familiar with the work on all devices and equipment necessary for the production of powdered milk. 12. The student learns about the defects and adulteration of milk

Teaching & Learning

Strategy	• The student should know how to know the sensory properties of milk for liquid milk • The student should know how to know the physical properties of liquid milk • Enabling the student to know the estimation of the components of milk, which are important to ensure that there is no change in their proportions and natural source, including protein, which is the important component in all products that are manufactured from raw milk, as well as estimating the percentage of fat on the basis of which the price of a liter of milk is determined, as well as determining the type of product that will be manufactured from it. • Estimating the water content so that the student can know whether the milk is adulterated with water or not , • The student also learns about the methods of adulterating milk, including whether it was treated thermally or not or starch was added to it, which is an alternative to the fat drawn.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name	Learning method	Valuation Method

			or		
1	2	General definition of milk and milk ingredients		Presence	- Homework.
2	2	Factors affecting the composition of milk ingredients		Presence	- Homework.
3	2	Physiochemical qualities of milk		Presence	- Homework.
4	2	Disadvantages and adulteration of milk		Presence	- Homework.
5	2	Milk treatment at GCs		Presence	- Homework.
6	2	Milk treatment in dairy laboratories		Presence	- Homework.
7	2	**Midterm Exam**		Presence	exam
8	2	Milk Heat Treatments		Presence	- Homework.
9	2	Sweetened condensed and condensed milk		Presence	- Homework.
10	2	Introduction to milk powder and its nutritional value		Presence	- Homework.
11	2	General Steps for Drying Milk		Presence	- Homework.
12	2	Methods of milk drying		Presence	- Homework.
13	2	Specifications for dried dairy		Presence	- Homework.
14	2	Milk powder		Presence	- Homework.
15	2	Defects in dried milk		Presence	- Homework.

Course Evaluation

Module Evaluation

REVIEW COURSE

	As	number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10:10	5 and 11.	All
	Assignments	2	10:10	6 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	(1/15)	All
Summative assessment	**Midterm Exam**	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
	Total assessment		100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Liquid Milk, Dr. Thabet Abdul Rahman, Dr. Raad Saleh Al-Hamdani
Key References (Sources)	
Recommended books and supporting	

references (scientific journals, reports……..)	
Electronic references, websites ,……	

Course Name **English**

Course Code: DST24020

Term / Year: First: Second

Date of preparation of this description: 3/5/2024

Available Attendance Forms: Classroom Attendance

- **Number of study hours (total) / 4**
  Number of units (total) 2

Name of course administrator (if more than one name is mentioned)

Name: Eng. Mustafa Abdul Karim Mukhaif/ **Email:** mustafa.a@uoqasim.edu.iq

Course Objectives

Learners will be able to:

1. Demonstrate awareness of some of the basic features of the community and culture of the target country, including greetings and other compliments, food and drink, and the infrastructure for daily living.
2. Use routine vocabulary, to include social and/or work-related terms and topics.
3. Use grammar and syntax to build sentences and simple conversations.
4. Information sharing in a range of personal, social and/or work-related contexts, including names, addresses, numbers, aspects of their immediate background and environment and in matters of urgent need.
5. Maintain conversations with others, including greeting, taking time off, and repairing communication interruptions by indicating lack of understanding or requesting repetition and inquiry.
6. Read daily information and instructions, including signs, notices, announcements, articles, brochures, phonebook, menu, and operating instructions for your ticket vending machine, public phone, fax machines, websites, email, and mobile communications.
7. Write short, relatively simple text chunks that are relevant to personal, social, and/or work-related needs.

Objectives of the unit	• **Helping the learner to develop language, reading, writing and numeracy skills related to English as a foreign language through unit topics and content.** • **To enable the learner to communicate effectively and appropriately in real-life situations.** • **To make it easier for the learner to read, interpret and understand a variety of materials using a range of media.** • **Develop interest in and appreciation of English language and grammar.** • **Developing and integrating the use of the four language skills of reading, listening, speaking and writing.** • **Review and reinforce the structure that has already been learned.**

Teaching & Learning

Strategy	Focus on academic language, literacy and vocabulary. Linking cognitive background and culture to learning. Increase comprehensible input and language output. Strengthening interaction Motivate higher thinking skills and use learning strategies.

Course Structure

Fifteenth	Hours	Intended Learning	Module /	Learning	Valuation Method

		Outcomes	Course Name or	method	
1	2	Greetings and farewells.		Presence	- Homework.
2	2	your world/ countries and nationalities.		Presence	- Homework.
3	2	All about you/ jobs/personal information and social expressions.		Presence	- Homework.
4	2	Family & Friends / Title + Names		Presence	- Homework.
5	2	My way of life/ languages and nationalities/ numbers and prices. Every day/current time/ weekdays.		Presence	- Homework.
6	2	My Favorites/Food/Beverages/Sports/Pronouns….		Presence	- Homework.
7	2	Where I live / rooms and furniture / directions and prepositions.		Presence	- Homework.
8	2	Past Times/ Time		Presence	- Homework.
9	2	Past / Saying years /Abnormal deeds….		Presence	- Homework.
10	2	We had a great time/ questions and cons.		Presence	- Homework.
11	2	I can do it/requests and offers/conditions.		Presence	- Homework.
12	2	Please and thank you / some and any / like and I would like.		Presence	- Homework.
13	2	Weather and forecasts.		Presence	- Homework.
14	2	Here and Now / Present Continuous and Present Simple		Presence	- Homework.
15	2	It's time to go/ plan ahead/ review.		Presence	- Homework.

Course Evaluation

Module Evaluation
REVIEW COURSE

As		number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	15:10	5 and 10.	1/3/5
	Assignments	2	15:10	2 and 12.	2/3/6
	Report	1	10:10	13	4 6 7

Summative assessment	**Midterm Exam**	2hr	10:10	7	1-5
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources	
Required course books (methodology if any)	John and Liz Soarse, *New Headway Plus: Beginner*. Oxford, UK: Oxford University Press, 2014.
Key References (Sources)	John and Liz Soarse, *New Headway Plus: Intermediate*. Oxford University Press, Oxford.
Recommended books and supporting references (scientific journals, reports……..)	
Electronic references, websites ,……	https://learnenglish.britishcouncil.org/

Course Name **Microdairy revival**	
Course Code: DST24118	
Term / Year: First :Second	
Date of preparation of this description: 3/5/2024	
Available Attendance Forms: Classroom Attendance	
• **Number of study hours (total) / 4** **Number of units (total) 2**	
Name of course administrator (if more than one name is mentioned)	
Name: Prof. Dr.Sadiq Zia Mounir/ **Email:** Sadeq.muneer@fosci.uoqasim.edu.iq	

Course Objectives

1. Identify the microbial species in raw milk.
2. Mention the different terms associated with microbes found in dairy products.
3. Summarize how microbes can affect the quality of butter and cream.
4. Discuss the different microbiological aspects of concentrated and powdered milk
5. Recognize microbial growth in ice cream and related products
6. Describe different types of fermentation in fermented milk.
7. Recognize the roles of microbes in therapeutic dairy products
8. Recognize the microbiological aspects of soft and hard cheeses
9. Describe the importance of bacteria in raw and processed dairy products
10. Census of direct and indirect assessment of microbial content in milk and dairy products

Objectives of the unit	• Demonstrate an understanding of the structural similarities and differences between micro and the unique structural/functional relationships of prokaryotic cells. • Understand the basics of the microbiology of dairy products. • Appreciate the diversity of dairy microorganisms and microbial communities in milk and d products and learn how microorganisms solve the underlying problems posed by t environments. • Learn how the basic principles of epidemiology and morbidity in milk and dairy products.
Teaching & Learning	

Strategy	The main strategy to be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time improving and expanding their critical thinking skills. This will be achieved through classroom and interactive tutorials and by looking at the types of simple experiments that include some sampling activities that are of interest to students

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Introductions to Dairy Microbiology		Presence	- Homework.
2	2	Raw milk		Presence	- Homework.
3	2	Morphology, classification and characteristics of dairy bacteria		Presence	- Homework.
4	2	Microbiology of cream and butter		Presence	- Homework.
5	2	Concentrated and powdered milk microbiology		Presence	- Homework.
6	2	Ice Cream Microbiology and Related Products		Presence	- Homework.
7	2	Midterm Quiz		Presence	- Homework.
8	2	Microbiology of fermented milk		Presence	- Homework.
9	2	Microbiology of therapeutic dairy products		Presence	- Homework.
10	2	Impact of storage and transportation on Microbiota in raw milk		Presence	- Homework.
11	2	Procedures for direct assessment of the microbial content of milk and dairy products		Presence	- Homework.
12	2	Microbiological product sampling		Presence	- Homework.
13	2	Soft and Hard Cheese Microbiology		Presence	- Homework.
14	2	Procedures for Indirect Milk Evaluation		Presence	- Homework.
15	2	Microbial content of milk and milk products		Presence	- Homework.

Course Evaluation

Module Evaluation
REVIEW COURSE

As		number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	Midterm Exam	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All

Total assessment	100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Riedel S, & Hobden J.A., & Miller S, & Morse S.A., & Mietzner T.A., & Detrick B, & Mitchell T.G., & Sakanari J.A., & Hotez P, & Mejia R(Eds.), (2019). *Jawetz, Melnick, & Adelberg's Medical Microbiology, 28e*. McGraw Hill. https://accesspharmacy.mhmedical.com/content.aspx?bookid=2629&sectionid=217768734
Key References (Sources)	*Robinson, Richard K.. "Dairy microbiology handbook: the microbiology of milk and milk products." (1996).*
Recommended books and supporting references (scientific journals, reports……..)	
Electronic references, websites ,.....	https://www.coursera.org/courses?query=microbiology

Course Name

Microscopic modesty

Course Code: DST23015

Term / Year : First :Second

Date of preparation of this description : 3/5/2024

Available Attendance Forms: Classroom Attendance

- **Number of study hours (total) / 4**
  Number of units (total) 2

Name of course administrator (if more than one name is mentioned)

Name: Prof. Dr.Sadiq Zia Mounir/ **Email:** Sadeq.muneer@fosci.uoqasim.edu.iq

Course Objectives

1. Identify the types and forms of microbes.
2. List the different terms associated with microbial composition and functions.
3. Summarize the stages of microbial growth
4. Discuss different genetic material in microbial cells and flow of molecular information
5. Recognize microbial coexistence with humans
6. Describe the different types of viral and bacterial diseases such as vector-borne diseases, food-borne diseases, water-borne diseases, and soil-borne diseases.
7. Identify the structure of viruses, fungi, parasites and algae cells
8. Distinguish between different types of microbial cells
9. Describe the importance of viral and bacterial diseases from person to person
10. Recognize how the basic principles of epidemiology, disease, and pathogenesis of certain microbes affect human health.
11. Demonstrate sterilization technique and carry out routine culture handling tasks safely and effectively

Objectives of the unit	• Demonstrate an understanding of the structural similarities and differences between microbes and the unique structural/functional relationships of prokaryotic cells. • Understand the basics of the microbiology of dairy products. • Appreciate the diversity of dairy microorganisms and microbial communities in milk and dairy products and learn how microorganisms solve the underlying problems posed by their environments. • Learn how the basic principles of epidemiology and morbidity in milk and dairy products.

Teaching & Learning

Strategy	The main strategy to be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time improving and expanding their critical thinking skills. This will be achieved through classroom and interactive tutorials and by looking at the types of simple experiments that include some sampling activities that are of interest to students.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Introduction to the world of microbes		Presence	- Homework.
2	2	Microbial cell structure and function		Presence	- Homework.
3	2	germs.		Presence	- Homework.
4	2	Microbial Metabolism		Presence	- Homework.
5	2	Microbial Inheritance		Presence	- Homework.
6	2	Molecular Information Flow and Protein Processing		Presence	- Homework.
7	2	Midt -Term		Presence	exam
8	2	Microbial symbiosis with humans		Presence	- Homework.
9	2	Bacterial and viral diseases from person to person		Presence	- Homework.
10	2	Soil-Borne Bacterial and Viral Diseases		Presence	- Homework.
11	2	Bacterial and viral diseases transmitted by water and food		Presence	- Homework.
12	2	Virology		Presence	- Homework.
13	2	Introduction to Mycology		Presence	- Homework.
14	2	Introduction to Parasitology		Presence	- Homework.
15	2	Introduction to Algology		Presence	- Homework.

Course Evaluation

Module Evaluation

REVIEW COURSE

As	number	Weight (Marks)	Week Due	Relevant Learning Outcome

Formative assessment	Quizzes	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	Midterm Exam	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
	Total assessment		100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Riedel S, & Hobden J.A., & Miller S, & Morse S.A., & Mietzner T.A., & Detrick B, & Mitchell T.G., & Sakanari J.A., & Hotez P, & Mejia R(Eds.), (2019). *Jawetz, Melnick, & Adelberg's Medical Microbiology, 28e*. McGraw Hill. https://accesspharmacy.mhmedical.com/content.aspx?bookid=2629&sectionid=217768734
Key References (Sources)	Willey, J. M., Sherwood, L. M., Woolverton, C. J., & Prescott, L. M. (2012). *Prescott's principles of microbiology*. New York: McGraw-Hill.
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	https://www.coursera.org/courses?query=microbiology

Course Name

Biochemistry

Course Code: DST23111

Term / Year : First :Second

Date of preparation of this description: 3/5/2024

Available Attendance Forms: Classroom Attendance

- **Number of study hours (total) / 4**
  Number of units (total) 2

Name of course administrator (if more than one name is mentioned)

Name: Prof. Dr.Ahmed Karim Obaid/ **Email:** ahmedaldulaimi1@gmail.com

Course Objectives

1- Understand basic concepts: The primary goal of teaching organic chemistry is to ensure that students have a solid understanding of basic concepts such as molecular structure, chemical bonds, functional groups, chemical reaction, and stereochemistry.

3. Students should be able to plan and implement the introduction and classification of fats and fatty acids (F.A), F.A labels, saturated F.A, unsaturated F.A, and physical and physiological characteristics of the F.A.

4- Proteins: Students must be proficient in the structure and matching of proteins, primary structure, secondary structure, tertiary structure, quaternary structure.
5- Carbohydrates: Students must develop the ability to analyze the chemistry of monosaccharides, glycosides, disaccharides, and sugars. Physiologically important monosaccharides, glycosides, disaccharides, and sugars.
6- Integrating the basic concepts that describe the traditional basic topics of biochemistry: structure and metabolism. At the end of the semester, students should be able to understand the chemical structure and function of all the biomolecules found in living organisms.

Objectives of the unit	• Teaching students biochemical molecules, chemical compositions, and knowing the shape of biochemical molecules, and how to do it. • Clarify the importance of biomolecules and their practical applications in order to develop and keep pace with scientific development in biochemistry. • Teaching and educating students on all necessary information related to biochemistry, which qualifies them to work and research in all fields of biochemistry.

Teaching & Learning

Strategy	- The lecture method and the use of the interactive whiteboard. - Explaining and clarifying providing students with the basics and additional topics related to the outputs of chemical thinking and organic analysis. - Forming discussion groups during lectures to discuss organic chemistry topics that require thinking and analysis. - Ask students a set of reflective questions during lectures such as what, how, when, and why for specific topics. - Giving students homework that requires subjective interpretations in causal ways.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Principles of Biochemistry		Presence	- Homework.
2	2	Amino Acids: A.A. Structures (Standard A.A. Abbreviation Table and Side Chain)		Presence	- Homework.
3	2	Amino acids: classification, properties, isomerism		Presence	- Homework.
4	2	Peptides: peptide bond, resonance forms, isomers, physical properties, and chemical reactions.		Presence	- Homework.
5	2	Proteins: structure and matches of proteins, primary structure, secondary structure, tertiary structure, quaternary structure.		Presence	- Homework.
6	2	canteen		Presence	- Homework.
7	2	Midt- Term		Presence	exam
8	2	Proteins: classification, synthesis,		Presence	- Homework.

		cellular functions (enzymes, cell signaling, linker transport, structural proteins), protein in nutrition.			
9	2	Carbohydrates: Chemistry of monosaccharides, glycosides, disaccharides and sugars. Physiologically important monosaccharides, glycosides, disaccharides, and sugars.		Presence	- Homework.
10	2	canteen		Presence	- Homework.
11	2	Fats: Introduction, Fat Classification, Fatty Acids (F.A), F.A Labels, Saturated F.A, Unsaturated F.A, Physical and Physiological Properties of F.A		Presence	- Homework.
12	2	Enzymes: structures and mechanism, nomenclature, classification, catalytic mechanisms, thermodynamics, specificity, lock and key model, induced fit model		Presence	- Homework.
13	2	canteen		Presence	- Homework.
14	2	Special Topics: Nutrition, Digestion and Absorption. Biomedical importance, digestion and absorption of carbohydrates, fats, proteins, vitamins and minerals. Power Balance Biochemistry for hemostasis and clot formation.		Presence	- Homework.
15	2	final exam		Presence	exam

Course Evaluation

Module Evaluation
REVIEW COURSE

As		number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	10	2,3, 5,9, 11	3 and 4.
	Assignments/lab	2	5	5 and 9	5
	Projects	2	5	10 and 42	4
	Report/Lab	10	10	All experiments	3, 4 and 5
Summative assessment	Midterm Exam	1	20	7	Ibid., p. 3.
	Final Exam	1	50	15	1, 2, 3, 4, 5, 6...
Total assessment			100		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources	
Required course books (methodology if any)	Harper's Illustrated Biochemistry, Twenty-Sixth Edition
Key References (Sources)	
Recommended books and supporting references (scientific journals, reports……..)	
Electronic references, websites ,……	

5. Course Name

Quality control and quality control of dairy products

Course Code: DST11001

6. Semester 1 / Year 3

7. Date of preparation of this description : 3/5/2024

8. Available Attendance Forms: Classroom Attendance

- Number of study hours (total) / 6
  Number of units (total) 3

9. Name of course administrator (if more than one name is mentioned)

Name : Dr. Qaisar Hamad Gabe/ **Email:** qayssarhamad@fosci.uoqasim.edu.iq

Course Objectives

1. Studying the definition and importance of food and dairy quality control.

2. To study ways of using quality control for different types of foodstuffs.
3. Studying the importance of food specifications.
4. Familiarize yourself with the principles of some quality management systems geared towards food quality control.
5. Develop procedures and methods to identify food safety risks in food processing.
6. Apply preventive measures and control methods to reduce microbiological hazards and maintain the quality of foodstuffs.
7. Recognize a wide range of criteria that affect food quality.

Objectives of the unit	• Recognize the scientific terminology of the material. • Proper use of laboratory equipment to measure the quality and specifications of food and dairy. • Learn about the international standards for food. • Familiarity with the latest global quality control systems such as HACCP. • Access to the tasks and work of the standardization and quality control body. • Teach the student the definition and meaning of quality control and food quality control. • Teaching the student how to use laboratory devices to determine food quality. • Teaching the student the basic principles of the concept of quality and quality control.

10. Teaching and Learning Unit

Strategy	The main strategy that will be followed in delivering this module is to encourage students' participation in the exercises, while at the same time improving and expanding their critical thinking skills. This will be achieved through lessons, interactive teaching and by looking at the types of simple experiments involving some sample activities that are interesting to students.

11. Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	**Introduction and Definition of Quality Control**		Presence	- Homework.
2	2	**Qualitative control**		**Presence**	- Homework.
3	2	**Quality label**		**Presence**	- Homework.
4	2	**Methods used in determining food quality**		**Presence**	- Homework.
5	2	**Color**		**Presence**	- Homework.
6	2	**Viscosity and texture**		**Presence**	- Homework.
7	2	**Specifications for different foods**		**Presence**	- Homework.
8	2	**Midterm Exam**		**Presence**	exam
9	2	**Defects in food**		**Presence**	- Homework.
10	2	**Defect Detection Checks**		**Presence**	- Homework.
11	2	**Fraudulent food**		**Presence**	- Homework.
12	2	**Fraudulent Food Detection Checks**		**Presence**	- Homework.
13	2	**HACCP**		**Presence**	- Homework.
14	2	**HACCP**		**Presence**	- Homework.
15	2	**ISO**		**Presence**	- Homework.

12. Course Evaluation

Module Evaluation REVIEW COURSE					
As		***number***	***Weight (Marks)***	**Week Due**	**Relevant Learning Outcome**
Formative assessment	***Quizzes***	2	10:10	**5 and 10.**	**All**
	Assignments	2	10:10	**2 and 12.**	**All**
	Projects	1	10:10	**continuous**	**All**
	Report	1	10:10	**13**	**All**
Summative assessment	***Midterm Exam***	2hr	10:10	**7**	**All**
	Final Exam	3hr	%50 %50	**16**	**All**
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

13. Learning and Teaching Resources

Required course books (methodology if any)	Quality Control and Food Standard Specification by Dr. Shimon Korkis.
Key References (Sources)	- **Food Quality Control and Control by Dr. on the entire forearm. Faculty of Agriculture University of Jo 2000** - **Quality Control and Food Standard Specification by Dr. Shimon Korkis**
Recommended books and supporting references (scientific journals,	
Electronic references, websites ,.....	

Course Name

Economics of dairy production and marketing

Course Code: DST35022

First Semester /Third Year

Date of preparation of this description : 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) / 5
Number of units (total) 3

Name of course administrator (if more than one name is mentioned)

Name: Hayat Kazem Odeh/ Email: hay1963@fosci.uoqasim.edu.iq

Course Objectives
Subject

Identify the concept of production economics and its objectives.
2. Identify the relationships between materials and production.
Enabling students to determine the optimal size of the productive resource used in the production function.
Identify price relationships and selection indicators.
5-Enabling students to find the optimal supplier combination that leads to reducing production costs.
Identifying the production costs of their types , functions , and derivatives .
7-Enabling students to measure the economic efficiency of projects .
8- Explaining the importance of marketing, as marketing is nowadays more important than production.
9- Teaching the student modern marketing methods, and how to enter the markets and make profits.
10- It contributes to the development of the student's marketing capabilities because the field of work of the graduates of the department is food processing.
11- Teaching students how to discover the desires and needs of consumers of goods and services and work to provide and satisfy these needs as much as possible.
Introducing the student to the importance of green marketing and how to contribute to preserving the environment

Objectives of unit	Upon completion of the course , students are expected to be able to: Understanding the economics of production and its importance in their working life. Understanding the supply and demand and the factors affecting each of them. Understanding the flexibility of demand and supply and their types. Understand how and when the equilibrium is done and what are the cases of changes in demand and supply and how they affect the equilibrium in the market. Determining the optimal size of productive resources. Determining the price relations that lead to maximum profits. Choosing the optimal combination of resources that reduces costs. Finding the optimal supplier combination that leads to reducing production costs. Calculating production costs of all kinds and derivatives . Understanding the concept of economic efficiency. How to measure the economic efficiency of projects. Economic feasibility study for productive projects. How to maximize sales in the markets. Learn modern marketing methods, and how to enter markets and make profits. Developing their marketing capabilities because the field of work of the graduates of the department is food processing. Discovering the desires and needs of consumers of goods and services and working to provide and satisfy these needs as much as possible. Knowing the concept of green marketing and working to follow it. How to practice e-marketing.

Teaching and Learning Unit

Strategy	The main strategy that will be followed in delivering this module is to encourage students' participation in the exercises, while at the same time improving and expanding their critical thinking skills. This will be done through lessons, interactive tutorials, and through the adoption of different types of simple experiments that include some sample activities that are of interest to students.

Course Structure

Fifteenth	Ho	Intended Learning	Module /	Learni	Valuation Method

	urs	Outcomes	Course Name or	ng method	
1	3	Basic concepts in production economics Definition of economics – the concept of production economics		Presenc e	- Homework.
2	3	Supply and demand - market equilibrium		**Presen ce**	- Homework.
3	3	Elasticity of demand and elasticity of supply		**Presen ce**	- Homework.
4	3	Production - production elements - production functions and types		**Presen ce**	- Homework.
5	3	Relationship when using one production item		**Presen ce**	- Homework.
6	3	Production relations when using more than one item		**Presen ce**	- Homework.
7	3	**Production costs, types of costs, production cost curves**		**Presen ce**	- Homework.
8	3	**Midterm Exam**		**Presen ce**	exam
9	3	**Price relationships and selection indicators, optimal combination and cost reduction.**		**Presen ce**	- Homework.
10	3	**Measurements of economic efficiency of projects.**		**Presen ce**	- Homework.
11	3	**Study for Marketing.**		**Presen ce**	- Homework.
12	3	**Basic Concepts of Marketing, Importance of Marketing Activity, Basic Marketing Characteristics.**		**Presen ce**	- Homework.
13	3	**Differences between the concepts of selling and marketing.**		**Presen ce**	- Homework.
14	3	**Basic marketing functions**		**Presen ce**	- Homework.
15	3	**The most important features of the modern marketing trend, green marketing.**		**Presen ce**	- Homework.

Course Evaluation

Module Evaluation REVIEW COURSE					
	As	**Time/ um ber**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessmen t	**Quizzes**	**2**	**10:10**	**5 and 10.**	**All**
	Assignments	**2**	**10:10**	**2 and 12.**	**All**
	Projects	**1**	**10:10**	**continu**	**All**

				ous	
	Report	1	10:10	13	All
Summative assessment	Midterm Exam	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology)	Applied Economics in Business Administration,George Fahmy Rizk , First Edition, Academic Library, 1999 Principles of Economics Karim Mahdi Al-Hasnawi , Legal Library, Baghdad , 2011 3-Production Economics - Printed Lectures by Dr. Mohsen Owaid / Faculty of Agriculture / University of Baghdad 4-Principles of Modern Marketing between Theory and Practice – Dr. Zakaria Ahmed Azzam et al. 2008
Key References (Sources)	1- Economics of agricultural and industrial production, d. Mohammed Ibrahim Naji ,2016 , 1st Edition, Amjad Publishing and Distribution House, The Hashemite Kingdom of Jordan
Recommended books and supporting references (scientific journals, reports.....)	**2-MarketingPrinciples – Cutler Flip**
Electronic references, websites ,.....	

Course Name

Dairy Chemistry

Course Code: DST35123

First Semester /Fourth Year

Date of preparation of this description : 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) / 6

Number of units (total) 3

Name of course administrator (if more than one name is mentioned)

Name: Dr.Jassim Mohammed Saleh Al-Saadi/ Email: jasim_salih@fosci.uoqasim.edu.iq

Course Objectives

The main objectives of this lesson are to clarify the chemical composition of milk for students and the composition of its products. It also explains to the student the chemical composition of milk fat, its manufacturing importance and the types of defects to which it is exposed . This lesson also aims to give the student a detailed idea of the types of milk proteins, their chemical properties, their interactions with other milk components, and their role in making cheese and curd . The importance of milk sugar - milk salts and minerals - as well as some of the physiochemical qualities of milk will also be explained to the student.

Objectives of the unit	Upon completion of this course, the student will be able to : Identifying the chemical composition of milk produced from different animals. Determining the factors that affect the composition of milk. Identifying the chemical composition of milk fats and the factors that distinguish th from the rest of the fats found in nature. Clarifying the main defects that milk fat is exposed to, namely fat decomposition self-oxidation. Identifying the main milk proteins (caseins and whey proteins) and clarifying structural differences between them . Identifying the chemical composition of alpha s casein, beta casein and kappa casei Understanding the effect of chymosin enzyme on caseins and the mechanism coagulation of milk to form cheese. Identify the chemical composition and properties of beta-lactoclopulin, alp lactalbumin and serum albumin. Explain the vital roles of lactose sugar in milk and the main synthetic properties of sugar. Identify the types of salts in milk and understand the impact of diffe manufacturing transactions on them.

Teaching and Learning Unit

Strategy	The method of delivering the lecture to provide students with the theoretical basics related to previous education outcomes. -Applying what has been learned theoretically at the practical level. Relying on the principle of collaborative learning by dividing students into homogeneous groups for the purpose of preparing research and daily reports. Ask students a set of reflective questions during lectures such as what, how, when, and why for specific topics. -Giving students assignments that require subjective explanations in causal ways.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Milk Composition, Factors Affecting Milk Composition, Milk Fat		Presence	- Homework.
2	2	Definition of fat , milk fat composition		Presence	- Homework.
3	2	Milk fat crystal		Presence	- Homework.
4	2	Defects in milk fat		Presence	- Homework.
5	2	Lipolysis		Presence	- Homework.
6	2	Self-oxidation		Presence	- Homework.
7	2	Milk Proteins		Presence	- Homework.
8	2	Composition of milk proteins		Presence	- Homework.
9	2	Casein		Presence	- Homework.
10	2	Alpha S Casein		Presence	- Homework.
11	2	Beta casein		Presence	- Homework.
12	2	Kappa casein		Presence	- Homework.
13	2	Milk Navigator Images on which salts are found in milk Factors Affecting the Saline Balance in Milk		Presence	- Homework.
14	2	Milk coagulation by chymosin enzyme		Presence	- Homework.
15	2	Solubility Crystallization of lactose sugar		Presence	- Homework.

Course Evaluation

Module Evaluation

REVIEW COURSE

As		number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	Midterm Exam	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Dairy Chemistry. 1984 .Amer Mohammed Ali , Mohsen Al-Shabibi ,Mahmoud Eid Al-Omar ,Sadiq Jawad Tohme .
Key References (Sources)	Dairy Chemistry and Biochemistry. 1998 P.F. Fox and P.L.H. McSWEENEY .
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	https://dairyprocessinghandbook.tetrapak.com/chapter/chemis milk

Course Name

Enzyme

Course Code: DST35124

First Semester /Third Year

Date of preparation of this description : 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) / 5
Number of units (total) 3

Name of course administrator (if more than one name is mentioned)

Name: Dr.Jassim Mohammed Saleh Al-Saadi/ Email: jasim_salih@fosci.uoqasim.edu.iq

Course Objectives

The main objectives of this lesson are to introduce the student to the chemical structure of enzymes, the sections and naming of enzymes, how they work, and the effect of stimulants and inhibitors on them.

The lesson is also concerned with the student being able to separate and purify enzymes in several ways from natural sources for use in the field of food processing. The student should be able to detect and measure the effectiveness of enzymes and can install enzymes on the props to impose the reaction in several different ways Emphasis will be placed on the uses of enzymes in food science and their various applications, which lead to the acceleration of chemical reactions and the production of food products in the shortest time and less cost.	
Objectives of the unit	Upon completion of this course, the student will be able to : Identifying the chemical structure and biological nature of the enzyme. Understanding the mechanism of enzymatic action and identifying the factors affecting the speed of enzymatic reactions. Identifying the classification and naming of enzymes. Identifying the types of inhibitors and enzymatic stimulants and the mechanism of their work . Understanding the importance of enzymes in food. Identifying the importance of enzymes in the manufacture of dairy products. Recognize the importance of enzymes in the manufacture of cereal and fruit products. Identifying the chemical composition and properties of different types of proteases and their uses in foods. Understanding the vital roles of transglutaminase enzymes and their uses in food. 10- Identifying the role of the use of restricted enzymes in food processing
Teaching and Learning Unit	
Strategy	The method of delivering the lecture to provide students with the theoretical basics related to previous education outcomes. -Applying what has been learned theoretically at the practical level. Relying on the principle of collaborative learning by dividing students into homogeneous groups for the purpose of preparing research and daily reports. Ask students a set of reflective questions during lectures such as what, how, when, and why for specific topics. -Giving students assignments that require subjective explanations in causal ways.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	**Introduction - Definition of enzymes - How enzymes work as cofactors**		Presence	- Homework.
2	2	**Nomenclature and classification of enzymes**		**Presence**	- Homework.
3	2	**Factors affecting the reaction rate**		**Presence**	- Homework.
4	2	**Enzyme Inhibitors and Stimulants**		**Presence**	- Homework.
5	2	**Effective Enzyme Location**		**Presence**	- Homework.
6	2	**Food Enzymes - Milk and Milk Products Grain Products Enzymes - Fruits and Vegetables**		**Presence**	- Homework.
7	2	**Midterm Exam**		**Presence**	exam
8	2	**Uses of enzymes - carbohydrates**		**Presence**	- Homework.
9	2	**Pectin enzymes - Invertase- Protease- Lipases-**		**Presence**	- Homework.
10	2	**Oxidizing and reducing enzymes**		**Presence**	- Homework.
11	2	**Enzymatic and non-enzymatic tanning**		**Presence**	- Homework.
12	2	**Use of restrictive**		**Presence**	- Homework.

		enzymes in food processing, factors affecting the use of restrictive enzymes			
13	2	**Converted Sugar Production - High Fructose Corn Syrup Production**		**Presence**	- Homework.
14	2	**Transglutaminase**		**Presence**	- Homework.
15	2	**Different types of proteases and their uses in food**		**Presence**	- Homework.

Course Evaluation

Module Evaluation REVIEW COURSE					
As		***Time/Number***	***Weight (Marks)***	**Week Due**	**Relevant Learning Outcome**
Formative assessment	***Quizzes***	2	10:10	**5 and 10.**	**All**
	Assignments	2	10:10	**11**	**All**
	Projects	1	10:10	**continuous**	**All**
	Report	1	10:10	**13**	**All**
Summative assessment	***Midterm Exam***	2hr	10:10	**7**	**All**
	Final Exam	3hr	%50 %50	**16**	**All**
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Al-Dulaimi Khalaf Sufi Daoud (2002) Microbial Enzymes and Biotechnologies, Amman, National Library Daoudi Ali Mohammed Hassan (2008) Biochemistry, Part III 2. -528 3- Dalali Bassel Kamel, Sadiq Hassan Al-Hakim(1987) Food Analysis.University of Al Mosul
Key References (Sources)	
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	

Course Name **Technology of initiators and fermenters**
Course Code: DST35125
First Semester /Third Year
Date of preparation of this description : 3/5/2024
Available Attendance Forms: Classroom Attendance
Number of study hours (total) 5 Number of Units (Total) 3
Name of course administrator (if more than one name is mentioned)
Name: Dr. Ali Raad Abdul Kadhim/ Email: Armulakhudair1@fosci.uoqasim.edu.iq
Course Objectives **Demonstrate an understanding of food safety and hygiene.** **Understand the basics of food safety and their importance.**

Appreciate the variety of terms used to describe food safety and hygiene.
Acknowledge how the principles of food safety control and food storage are applied.
10- The student understands the marketing methods of the developed milk products.

Objectives of the unit	Identify different types of initiators. Understand the basic concepts of the Proceeds technique. Analysis of different directory products. Define the concept of fermentation. Identify fermented milk products. Describe the importance of fermentation in the food industry. List of important parts in biofermenters. Definition of lactic fermentation, lactic yeast fermentation, and lactic mold fermentation. Distinguish between different parts of bioreactors and their uses.

Teaching and Learning Unit

Strategy	The main strategy that will be followed in delivering this module is to encourage students' participation in the exercises, while at the same time improving and expanding their critical thinking skills. This will be achieved through lessons, interactive tutorials, and by adopting different types of simple experiments that include some sample activities that interest students

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	**Introduction to starter's cultures**		Presence	- Homework.
2	2	**Annual Utilization of Starter Cultures**		**Presence**	- Homework.
3	2	**Classification of Starter Organisms**		**Presence**	- Homework.
4	2	**Terminology of Starter Cultures**		**Presence**	- Homework.
5	2	**Factors Causing Inhibition of Starter Cultures**		**Presence**	- Homework.
6	2	**Production Systems for Bulk Starter Cultures**		**Presence**	- Homework.
7	2	**Mid-term Exam**		**Presence**	exam
8	2	**Introduction to fermentation**		**Presence**	- Homework.
9	2	**Products of fermentation**		**Presence**	- Homework.
10	2	**Lactic Fermentations**		**Presence**	-Homework.
11	2	**Yeast-Lactic Fermentations**		**Presence**	- Homework.
12	2	**Mold-Lactic Fermentations**		**Presence**	- Homework.
13	2	**Types of fermentation processes and its stages**		**Presence**	- Homework.
14	2	**Introduction to bioreactor**		**Presence**	- Homework.
15	2	**Bioreactors types and their construction**		**Presence**	- Homework.
16	2	**Preparatory week before the final Exam**		Presence	exam

Course Evaluation

Module Evaluation REVIEW COURSE				
As	**number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**

Formative assessment	Quizzes	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	Midterm Exam	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	**Robinson, Richard K.. "Dairy microbiology handbook: the microbiology of milk and milk products." (1996).**
Key References (Sources)	**Riedel S, & Hobden J.A., & Miller S, & Morse S.A., & Mietzner T.A., & Detrick B, & Mitchell T.G., & Sakanari J.A., & Hotez P, & Mejia R(Eds.), (2019). Jawetz, Melnick, & Adelberg's Medical Microbiology, 28e. McGraw Hill. https://accesspharmacy.mhmedical.com/content.aspx?bookid=2629&sectionid=217768734**
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	**https://www.coursera.org/courses?query=microbiology**

Course Name

Manufacturing with thermal and non-thermal coefficients

Course Code: DST36126

Semester 2 / Year 3

Date of preparation of this description: 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) / 6
Number of units (total) 3

Name of course administrator (if more than one name is mentioned)

Name: Dr. Hanen Abd Alamir Al Asadi/ Email: haneen@fosci.uoqasim.edu.iq

Course Objectives

	Understand the basics of milk processing and the role of thermal and non-thermal treatments in the production of dairy products. Identify the different types of equipment and processes used in milk processing and dairy processing. Study the different types of heat treatments used in dairy processing, such as pasteurization, sterilization and UHT processing, and their effects on the quality and safety of dairy products. Understand the principles of non-thermal treatments, such as high-pressure processing, pulsed electric fields and ultraviolet radiation, and their application in the manufacture of dairy products. Understand the effect of processing on nutritional value, flavour, texture and shelf life of milk and dairy products. Familiarize yourself with regulatory requirements and quality control procedures for dairy processing and product manufacturing.
7. Develop practical skills to design and improve dairy manufacturing processes, including process simulation and modeling, process control, and product formulation.	
Objectives of the unit	Gain knowledge of various thermal and non-thermal processing methods used in the manufacture of dairy products. Determine appropriate processing methods for different types of dairy products based on their composition and characteristics. Identify critical control points during processing to manage food safety risks. Study the effects of different processing techniques on the nutritional, sensory and functional properties of dairy ingredients and products. Know the advantages and limitations of different processing methods for various dairy products. Familiarize yourself with the equipment, conditions and scientific principles involved in common dairy processing methods. Understand how processing methods meet regulatory standards and guidelines to ensure the safety of dairy products.

Teaching & Learning Strategy

This module can be designed to encourage active participation from students through interactive exercises and learning activities. This approach helps students dig deeper into the material and improve their understanding of key concepts. This lecture also aims to help students develop critical thinking skills by presenting realistic scenarios and problems for them to solve. This approach helps students apply their knowledge in practical situations and develop their problem-solving skills. In addition, simple experiments involving sampling activities can be included. This approach helps students understand the principles of food science and the effects of thermal and non-thermal processing on milk and dairy products.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	**Introduction to types of heat treatment applied to milk**		Presence	- Homework.
2	2	**Effect of heat treatments on milk**		Presence	- Homework.
3	2	**Effect of Heat on Milk Proteins**		Presence	- Homework.
4	2	**Effect of heat treatments on milk fat**		Presence	- Homework.
5	2	**Effect of heat treatments on milk salts**		Presence	exam
6	2	**Effect of heat treatments on milk lactose**		Presence	- Homework.
7	2	**Midterm Quiz**		Presence	exam
8	2	**Non-thermal techniques used to preserve milk and milk products**		Presence	- Homework.
9	2	**High Hydrostatic Pressure**		Presence	- Homework.

10	2	**Ultrasound**		Presence	- Homework.
11	2	**Electricity**		Presence	- Homework.
12	2	**The use of radiation in preserving milk and milk products**		Presence	- Homework.
13	2	**Heat Treatments for Milk and Sterilization of Containers**		Presence	- Homework.
14	2	**Quality control and quality assurance**		Presence	- Homework.
15	2	**final exam**		Presence	exam

Course Evaluation

Module Evaluation REVIEW COURSE					
As		***number***	***Weight (Marks)***	**Week Due**	**Relevant Learning Outcome**
Formative assessment	***Quizzes***	2	10:10	**5 and 10.**	**All**
	Assignments	2	10:10	**2 and 12.**	**All**
	Projects	1	10:10	**continuous**	**All**
	Report	1	10:10	**13**	**All**
Summative assessment	***Midterm Exam***	2hr	10:10	**7**	**All**
	Final Exam	3hr	%50 %50	**16**	**All**
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	High-Temperature Processing of Milk and Milk Products Hilton C. Deeth, Michael J. Lewis - 2017
Key References (Sources)	Advances in Thermal andNon-Thermal Food Preservation Gaurav Tewari , Vijay Juneja - 2007
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	

Course Name

Fatty Dairy Products

Course Code: DST36127

Semester 2 / Year 3

Date of preparation of this description: 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) / 6

Number of units (total) 3

Name of course administrator (if more than one name is mentioned)

Name: Dr. Diaa Ibrahim Al-Badrani/ **Email:** dhiaalarabi@ fosci.uoqasim.edu.iq

Course Objectives

The student learns about the chemical composition and physical properties of milk fat.

The student can distinguish between different types of fatty milk products.

The student learns about the mechanisms and methods of manufacturing fatty dairy products.

4-The student learns about the mechanisms and methods of manufacturing fatty products similar to fatty dairy products.

Objectives of the ur	The student learns what fatty products are for dairy and the differences between them. The student learns about the chemical composition of milk fat. The student knows the cream and distinguishes between the types of fraud and damage in it. The student learns about the methods of sorting fat by gravity and electric sorting. The student learns about the parts of the electric mills and their sorting mechanism. The student distinguishes between different types of cream. The student can learn about the natural properties of cream. The student learns about the theories of butter formation. The student learns about the steps of making butter. The student can calculate the proceeds of the butter and its service operations. The student learns about free fat and methods of manufacturing it. The student learns about the types of fatty products that resemble milk fat, such as vegetable butter.

Teaching & Learning Strategy

The primary teaching strategy to be followed in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through lectures and interactive learning activities, as well as looking at the types of simple experiments that include some sampling activities that interest students.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	3	Dairy products		Presence	- Homework.
2	**3**	**Composition of milk fat**		**Presence**	**- Homework.**
3	**3**	**Cream**		**Presence**	**- Homework.**
4	**3**	**milk separating**		**Presence**	**- Homework.**
5	**3**	**Sterilizers**		**Presence**	- Homework.
6	**3**	**Factors affecting the sorting process**		**Presence**	**- Homework.**
7	**3**	**exam**		**Presence**	exam
8	**3**	**Types of Cream**		**Presence**	**- Homework.**
9	**3**	**Characteristics of Cream**		**Presence**	**- Homework.**
10	**3**	**Butter**		**Presence**	**- Homework.**
11	**3**	**Butter washing Served**		**Presence**	**- Homework.**
12	**3**	**Butter rent**		**Presence**	**- Homework.**
13	**3**	**Sweet.**		**Presence**	**- Homework.**
14	**3**	**Free Fat Manufacturing**		**Presence**	**- Homework.**
15	**3**	**Vegetable Butter (Margarine)**		**Presence**	**- Homework.**

Course Evaluation

Module Evaluation
REVIEW COURSE

As		number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	Midterm Exam	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	High-fat dairy products
Key References (Sources)	Dairy Processing
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites	**https://agrimoon.com/wp-content/uploads/Fat-Rich-Dairy-Products-Technology-1.0.**

Course Name

Human Nutrition

Course Code: DST36128

Semester 2 / Year 3

Date of preparation of this description: 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) 4
Number of Units (Total) 2

Name of course administrator (if more than one name is mentioned)

Name: Dr. Ali Fuleih Mohareb Al-Sarraj / Email: dr.aliflayehalsaraj@foosci.uoqasim.edu

Course Objectives

Provide qualified cadres to promote the community in the field of food and nutrition, and improve the health and nutritional status of community members
Provide job opportunities for food and nutrition professionals

	Providing students with the capabilities to work in the field of nutrition, which increases job opportunities to raise the awareness of different groups of society from Nutritional. Develop scientific research in the field of nutrition and benefit from the expertise of faculty members to cooperate with institutions Related to food and nutrition Developing the necessary skills to develop food products in line with the wishes of the consumer and the health and safety of food.
Objectives of the ur	Providing job opportunities for food and nutrition professionals Providing scholarship and training opportunities for the Academic and Applied Development Authorit Developing scientific research in the field of nutrition Providing qualified cadres for the advancement of society in the field of food and nutrition Providing a quality program in nutrition Providing a supportive learning environment in the field of nutrition and food sciences.

Teaching & Learning

Strategy	The main strategy to be adopted in delivering this module is to encourage students to participate in exercises, while at the same time improving and expanding critical thinking skills. This will be achieved through classes, interactive lessons, and by looking at the types of simple experiments that include some sampling activities that are of interest to students. PowerPoint \ Lecture delivery\ Follow the lecture on paper \ Follow the lecture electronically

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	**Introduction to Human Nutrition**		Presence	- Homework.
2	2	**Carbohydrates**		**Presence**	- Homework.
3	2	**Fat**		**Presence**	- Homework.
4	2	**Proteins**		**Presence**	- Homework.
5	2	**Vitamins.**		**Presence**	- Homework.
6	2	**Metal elements**		**Presence**	- Homework.
7	2	Midterm Exam		**Presence**	exam
8	2	**Water**		**Presence**	- Homework.
9	2	**Metabolism**		**Presence**	- Homework.
10	2	**fat metabolism**		**Presence**	- Homework.
11	2	**Metabolism**		**Presence**	- Homework.
12	2	**Feeding Sensitive Groups**		**Presence**	- Homework.
13	2	**Malnutrition diseases**		**Presence**	- Homework.
14	2	**Nutrition at different stages of development**		**Presence**	- Homework.

Course Evaluation

Module Evaluation REVIEW COURSE				
	number	Weight (Marks)	Week Due	Relevant Learning

As					Outcome
Formative assessment	Quizzes	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	Midterm Exam	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Foundations of nutrition – food safety – food and human nutrition – therapeutic nutrition – human nutrition
Key References (Sources)	Foundations of nutrition – food safety – food and human nutrition – therapeutic nutrition – dietary patterns – human nutrition – dietary habits and traditions -websites – complete nutrition - vegetarians and their approach to nutrition
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	Foundations of nutrition – food safety – food and human nutrition – therapeutic nutrition – dietary patterns – human nutrition – dietary habits and traditions - Internet sites powanced Nutrition

Course Name

Food Processing

Course Code: DST36129

Semester 2 / Year 3

Date of preparation of this description: 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) 6
Number of Units (Total) 3

Name of course administrator (if more than one name is mentioned)

Name: Dr. Sadeq dheyaa Muneer / Email: sadeq.muneer@fosci.uoqasim.edu.iq

Course Objectives

Familiarity of students with all components of food, its processing, how to deal with raw materials, and methods of chemical analysis

Provide training opportunities at a level of required and competitive competence to develop skills in the fields of science and technology related to food processing in terms of means, efficiency and production

techniques in detail.
Linking theory, practice and practice covering all food products to all aspects related to food research management, development tools, techniques and quality.
Provide students with opportunities to enhance their practical skills and gain experience in the commercial and industrial environment.

5. Provide students with the opportunity to enter a variety of jobs in various aspects of the food industry including food factories, food quality control organizations and bodies, food analysis laboratories and specialized research centers, and food safety and quality assurance institutions.

Objectives of the unit	Preparing and graduating scientific cadres specialized in food science and technology from bachelor's degree holders. Cooperate with scientific and productive institutions in various fields of food processing. Contribute with the rest of the scientific departments in the college to support and develop the college and the university. To develop and enhance the capabilities of workers in production facilities related to food industries. Carrying out various scientific research, especially applied research, and participating in nati and international conferences and seminars.

Teaching & Learning

Strategy	The primary teaching strategy to be followed in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through lectures and interactive learning activities, as well as looking at the types of simple experiments that include some sampling activities that interest students.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Introduction to the importance of food industries and their development		Presence	- Homework.
2	**2**	Manufacturing of sugar		**Presence**	**- Homework.**
3	**2**	Sucrose Industry		**Presence**	**- Homework.**
4	**2**	Starch industry		**Presence**	**- Homework.**
5	**2**	Oils and fats		**Presence**	- Homework.
6	**2**	Sources of oils and how to obtain crude oil		**Presence**	**- Homework.**
7	**2**	Crude Oil		**Presence**	**- Homework.**
8	**2**	**Midterm Exam**		**Presence**	**exam**
9	**2**	Chocolate industry		**Presence**	**- Homework.**
10	**2**	Making biscuits		**Presence**	Betty!
11	**2**	Grain Processing		**Presence**	**- Homework.**
12	**2**	Characteristics and Processing of Meat and Fish		**Presence**	**- Homework.**
13	**2**	Soft drinks		**Presence**	**- Homework.**
14	**2**	Manufacture of dates		**Presence**	**- Homework.**
15	**2**	Baby Food Industry		**Presence**	- Homework.

Course Evaluation

Module Evaluation

REVIEW COURSE

As		*number*	*Weight (Marks)*	**Week Due**	**Relevant Learning Outcome**
Formative	***Quizzes***	2	10:10	**5 and 10.**	**All**

assessment	***Assignments***	2	10:10	**2 and 12.**	**All**
	Projects	1	10:10	**continuous**	**All**
	Report	1	10:10	**13**	**All**
Summative assessment	***Midterm Exam***	2hr	10:10	**7**	**All**
	Final Exam	3hr	%50 %50	**16**	**All**
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Food Processing Technology Specialization Book/ Kingdom of Saudi Arabia – Technical and Vocational Training Corporation/General Administration of Curriculum Design and Development (2008)
Key References (Sources)	Food Industries Technology Book/ Foundations of Food Preservation and Processing A.Dr. Saad Ahmed Saad Halabu a .Dr. Adel Zaki Mohamed Badie A.Dr. Mahmoud Ali Ahmed (Food Industries Department/ Faculty of Agriculture /Cairo University) Food Industries Book/ Dr. Hussein Mohammed Kateh
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	

Course Name

By-products and environmental contaminants of dairy products

Course Code: DST36130

Semester 2 / Year 3

Date of preparation of this description: 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) 6
Number of Units (Total) 3

Name of course administrator (if more than one name is mentioned)

Name: Dr. Sadeq Zia Muneer / Email: Sadeq.muneer@ fosci.uoqasim.edu.iq

Course Objectives

Understand the concept of by-products in dairy processing and the extent of their arbitrariness in some cases.
Identify by-products produced during milk processing such as yogurt, buttermilk, cream and skimmed milk.

	To learn about permeate whey production as a by-product of whey processing, and how it has become a side stream of dairy processing since the 1960s. Understand the membrane filtration process and its role in the fractionation, enrichment or purification of targeted nutrients. Estimate the importance of retrieving milk salts as a component of dairy products. Understand the potential uses of secondary dairy products in new food products, analyze the sensory and nutritional characteristics of secondary dairy products, and assess consumer acceptance of new food products based on secondary dairy products Understand the principles of bioremediation and the types of environmental contaminants that can be treated with microorganisms, and design and conduct experiments to test the effectiveness of different bioremediation strategies. Understand regulations and policies related to bioremediation and implement them in practice Identify the principles of pollution control and the types of pollutants that can be treated using different techniques. Design and operate pollution control systems using appropriate techniques and methodologies, analyze the effectiveness of different pollution control strategies and recommend appropriate solutions for different scenarios. Understand regulatory and policy considerations related to pollution control and the role of industry and government in implementing pollution control measures Understand the microbiology of cheese production and the factors affecting microbiological quality and safety of cheese by designing and conducting experiments to monitor and control microbiological quality and safety of cheese. Understand regulatory and safety considerations related to cheese production and the role of industry and government in ensuring microbiological quality and safety of dairy products
10. Understand the importance of wastewater treatment in the dairy industry and the characteristics of wastewater generated by dairy processing plants by operating wastewater treatment systems using appropriate techniques and methodologies, analyze the effectiveness of different wastewater treatment strategies and recommend appropriate solutions for different scenarios and understand the regulatory and policy considerations related to wastewater treatment in the dairy industry and the role of industry and government in implementing wastewater treatment measures.	
Objectives of the unit	Definition of the concept of sub-products in dairy processing: Students will be able to define the concept of sub-products resulting from dairy processing, and understand their relative nature in some cases. Common sub-products in dairy processing: Students will be able to identify different sub-products that are produced during milk processing, such as: curd, buttermilk, cream, and skimmed milk. Importance of Processed Whey Proteins: Students will be able to explain the production of processed whey proteins as a by-product of processing whey, and their importance in the dairy industry. Membrane filtration and its applications: Students will be able to describe the membrane filtration process and its role in cracking, enrichment, or purification of targeted nutrients. Sustainability of the dairy industry: Students will be able to recognize the importance of restoring milk salts as an ingredient in dairy products and its impact on the sustainability of the dairy industry. Benefit from sub-products: Students will be able to assess the sensory and nutritional characteristics of dairy sub-products and their potential use in new food products. Careful environmental analysis using organisms: Students will be able to explain the principles of careful environmental analysis using organisms and the types of environmental pollutants that can be treated with microorganisms. Microbiology and Cheese Quality Insurance: Students will be able to distinguish between the microbiology of cheese production and the factors that affect microbiological quality and cheese safety. Regulations and safety in the cheese industry: Students will be able to explain and understand regulatory and safety considerations related to cheese production and the role of industry and government in ensuring microbiological quality and safety of dairy products. Wastewater treatment in the dairy industry: Students will be able to

	understand the importance of wastewater treatment in the dairy industry and the characteristics of wastewater generated by dairy processing plants.

Teaching & Learning Strategy

This module provides rich resources for teachers and students alike, including:
Detailed explanation of the topics of each chapter: The teacher can rely on the content of the module as a rich reference when giving lectures. Interactive discussions: The module stimulates classroom discussions on various aspects of the dairy industry. Real-life case studies: provide practical examples of the use of by-products in the dairy industry. Practical Experiences: Provides students with the opportunity to acquire practical skills in the processing and use of by-products.Concepts of Micro-Environmental Analysis: Provides an explanation of the principles of micro-environmental analysis using living organisms. Designing environmental analysis experiments: Students can design and conduct experiments to test the effectiveness of environmental analysis strategies. Field trips: Allow students to learn about the applications of environmental analysis in practice. Pollution Control Principles: Provides an explanation of the practical aspects of pollution control, such as the design of treatment systems. Practical applications: Students can gain practical skills in setting up and monitoring pollution control systems. Learn regulations: Students can learn about regulations and policies related to pollution control.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	**Introduction**		Presence	- Homework.
2	2	**Skimmed milk based by-products**		Presence	- Homework.
3	2	**Milk protein**		Presence	- Homework.
4	2	**Micellar Cazin Center**		Presence	- Homework.
5	2	**Whey and whey-based products**		Presence	- Homework.
6	2	**Lactose and lactose derivatives**		Presence	- Homework.
7	2	**Midterm exam**		Presence	exam
8	2	**Spherical Fatty Milk Membrane**		Presence	- Homework.
9	2	**Developments in dairy products**		Presence	- Homework.
10	2	**Separating sludge and microfiltration**		Presence	- Homework.
11	2	**Pollution and pollution control strategies**		Presence	- Homework.
12	2	**Bioremediation of environmental pollutants**		Presence	- Homework.
13	2	**Consumption habits and acceptance of new products involving dairy products**		Presence	- Homework.
14	2	**final exam**		Presence	exam

Course Evaluation

Module Evaluation
REVIEW COURSE

As		number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	Midterm Exam	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources	
Required course books (methodology if any)	Byproducts from Dairy Processing in Book "Byproducts from Agriculture and Fisheries" Diana Luazi Oliveira, Patrick Fox James A. O'Mahony-2019 Pollution Problems in Selected Food Industries; Excludes Meat, Poultry and Grain-based Foods, National Industrial Pollution Control Council. Dairy, Fish and Other Foods Sub-Council - 1971
Key References (Sources)	Clean Water and the Dairy Products Industry, Environmental Protection Agency, United state - 1976
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	

Course Name

Ice Cream Industry

Course Code: DST47139

Semester / Year : Second :Fourth

Date of preparation of this description : 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) / 6
Number of units (total) 3

Name of course administrator (if more than one name is mentioned)

Name : Dr.Jassim Mohammed Saleh Al-Saadi/ **Email:** jasim_salih@fosci.uoqasim.edu.iq

Course Objectives

Qualifying dairy science students with a broad knowledge of milk ice cream production techniques so that the graduate can employ that knowledge in the field of food and dairy

Qualifying the students of the Department of Dairy and Food Sciences to be familiar with the theoretical and practical aspects of the technology of producing milk ice cream as one of the basic sciences in food and dairy sciences

Acquiring a wide knowledge and skill in the science of milk ice cream production so that the graduate can employ those knowledge and skills in the field of food science
Ability to acquire modern methods of learning, assessment and critical thinking
Ability to manage environmental projects, oral and written communications, work within the environmental team, and the skill of presenting results in guidance or in environmental health seminars and conferences
The student has acquired the necessary skill to work on and manage all devices and equipment for the production of milk ice cream.

Objectives of the unit	The student should identify the raw materials used in the manufacture of ice cream. The student learns how to calculate the components of mixtures. The student should be able to make different types of milk ice cream. To be able to make ice cream powder. To be able to evaluate and judge ice cream. The student should be able to conduct the most important tests for dairy ice cream.

Teaching and Learning Unit

Strategy	Transferred general and qualifying skills (other skills related to employment and personal development). Use of videos, use of presentation, lab experiments, field experiments interactive lessons and by looking at the types of simple experiments that include some sampling activities that are of interest to students.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	A brief history of the milk ice cream industry		Presence	- Homework.
2	**2**	Internal raw materials in industry (milky and non-dairy raw materials)		**Presence**	**- Homework.**
3	**2**	Mixtures Formation Calculations		**Presence**	**- Homework.**
4	**2**	Mixtures Formation Calculations		**Presence**	**- Homework.**
5	**2**	General steps for making and installing the mixture (composition modification, acidity and heat treatment, naturalization, cooling, canning, freezing , packaging, solidification , storage , marketing)		**Presence**	- Homework.
6	**2**	General steps for making and installing the mixture (composition modification, acidity and heat treatment, naturalization, cooling, canning, freezing , packaging, solidification , storage , marketing)		**Presence**	**- Homework.**
7	**2**	**Midterm Exam**		**Presence**	**exam**
8	**2**	Making different types of ice cream		**Presence**	**- Homework.**
9	**2**	Making different types of ice cream		**Presence**	**- Homework.**
10	**2**	Making Ice Cream Powder		**Presence**	- Homework.
11	**2**	Recent trends in the ice cream industry		**Presence**	**- Homework.**
12	**2**	Possible defects in ice cream and how to overcome them		**Presence**	**- Homework.**
13	**2**	Evaluation and Arbitration of Milky Ice Cream		**Presence**	**- Homework.**

14	**2**	The most important tests conducted on ice cream		**Presence**	**- Homework.**
15	**2**	The most important tests conducted on ice cream		**Presence**	- Homework.

Course Evaluation

Module Evaluation REVIEW COURSE					
As		number	Weight (Marks)	**Week Due**	**Relevant Learning Outcome**
Formative assessment	Quizzes	**2**	**10:10**	5 and 10.	All
	Assignments	**2**	**10:10**	2 and 12.	All
	Projects	**1**	**10:10**	continuous	All
	Report	**1**	**10:10**	13	All
Summative assessment	Midterm Exam	**2hr**	**10:10**	7	All
	Final Exam	**3hr**	**%50 %50**	16	All
Total assessment			**100% (100 Marks)**		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	**Milky Ice Cream, Dr. Riyad Mohammed Salim, Faculty of Agriculture and Forestry , 1986**
Key References (Sources)	
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	

Course Name **Food analysis**
Course Code: DST47138
Semester / Year : Second :Fourth
Date of preparation of this description : 3/5/2024
Available Attendance Forms: Classroom Attendance
Number of study hours (total) / 5 Number of units (total) 3
Name of course administrator (if more than one name is mentioned)
Name : Dr.Jassim Mohammed Saleh Al-Saadi/ **Email:** jasim_salih@fosci.uoqasim.edu.iq
Course Objectives **Upon completion of this course, the student will be able to :** **Understand and apply methods of food sampling and data analysis .** Preparing laboratory samples and writing reports. **Identifying the methods of food spectroscopy.** Detecting the cheating methods used to cheat thefood.

Understanding and implementing the scientific and practical basis fordeporting the electrician with gels. **Understanding the scientific basis of chromatography, its types and applications in food analysis.** **Identifying gel filtration chromatography, ion exchange chromatography, and affinity chromatography and their uses in food analysis** Identifying the thin layer and column chromatography and its uses in food analysis. Identifying gaseous chromatography and its uses in food analysis. Identifying the highly efficient liquid chromatography, its types and uses in food analysis	
Objectives of unit	The main objectives of this lesson are to clarify the methods used to analyze foodstuffs, take food samples, the theoretical foundations and methods used to estimate food components, determine the percentage of moisture, ash, mineral salts, carbohydrates, fats and food compounds, and determine the components of food by modern methods. **This lesson is concerned with the student having the necessary information about modern devices and equipment used to analyze food and ways to use them.**

Teaching and Learning Unit

Strategy	Transferred general and qualifying skills (other skills related to employment and personal development). Use of videos, use of presentation, lab experiments, field experiments interactive lessons and by looking at the types of simple experiments that include some sampling activities that are of interest to students.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	3	Importance of food analysis, sampling methods,spectroscopy		Presence	- Homework.
2	**3**	Analysis in the field of visible light, ultraviolet analysis, infrared analysis		**Presence**	**- Homework.**
3	**3**	Flame analysis and atomic absorption, electro−migration analysis,		**Presence**	**- Homework.**
4	**3**	Electromigration methods, chromatography,		**Presence**	**- Homework.**
5	**3**	**Gel filtration chromatography.**		**Presence**	- Homework.
6	**3**	Ion exchange chromatography, affinity chromatography		**Presence**	**- Homework.**
7	**3**	**Midterm Exam**		**Presence**	**exam**
8	**3**	**paper chromatography, thin film chromatography**		**Presence**	**- Homework.**
9	**3**	Column Chromatography		**Presence**	**- Homework.**
10	**3**	Liquid gas		**Presence**	- Homework.
11	**3**	Liquid gas		**Presence**	**- Homework.**
12	**3**	High Efficiency Liquid Chromatography		**Presence**	**- Homework.**

13	**3**	High Efficiency Liquid Chromatography		**Presence**	**- Homework.**
14	**3**	**Detection of food fraud**		**Presence**	**- Homework.**
15	**3**	**Detection of food fraud**		**Presence**	- Homework.

Course Evaluation

Module Evaluation
REVIEW COURSE

As		number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	**Midterm Exam**	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Food Analysis by Dr.Bassel Dalali and Dr.Sadiq Al-Hakim,1987 . Ministry of Higher Education - University of Setif
Key References (Sources)	SWOT Analysis 2018 S. Suzanne Nielsen.
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	**https://people.umass.edu/~mcclemen/581Introduction.htr**

Course Name

Nanomedical Applications

Course Code: DST47137

Semester / Year : Second :Fourth

Date of preparation of this description : 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) / 4

Number of units (total) 2

Name of course administrator (if more than one name is mentioned)

Name: Dr.Sharafuddin Thamer/ **Email:** Dr.sharaf@biotech.uoqasim.edu.iq

Course Objectives

Identifying the role of nanotechnology and its applications in various sciences
Emphasizing the need to know the methods of manufacturing nano-atoms
Teaching students how to deal with devices in nanotechnology laboratories
Developing students' skills in how to prepare materials for the manufacture of nanoparticles
Learn about the concept of nanotechnology and its relationship with other sciences
Studying the manufacture and characterization of nanoparticles

How to deal with nanoparticle types and their preparation

8- How to prepare materials and supplies for the manufacture of nano-atoms

Objectives of the unit	Giving a basic understanding of the topic. An Introduction to Nanotechnology. Identify the methods of manufacturing nano-atoms. Identification of materials and nanotechnology requirements. Identify the devices used in nanotechnology.

Teaching and Learning Unit

Strategy	Transferred general and qualifying skills (other skills related to employment and personal development). Use of videos, use of presentation, lab experiments, field experiments interactive lessons and by looking at the types of simple experiments that include some sampling activities that are of interest to students.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Introduction to Nanotechnology		Presence	- Homework.
2	**2**	Properties of materials in nano scales		**Presence**	**- Homework.**
3	**2**	Application of nanotechnology in the dairy industry		**Presence**	**- Homework.**
4	**2**	Applications of Nanotechnology in Foodstuffs and the Delivery of Biologically Active Agents		**Presence**	**- Homework.**
5	**2**	Nanoparticle Characterization Methods Midterm Quiz		**Presence**	- Homework.
6	**2**	Nanotechnology in vitamin delivery		**Presence**	**- Homework.**
7	**2**	Manufacturing of nanoparticles (top-down and bottom-up methods)		**Presence**	**- Homework.**
8	**2**	Organic Nanoparticles		**Presence**	**- Homework.**
9	**2**	Inorganic Nanoparticles		**Presence**	**- Homework.**
10	**2**	Application of nanotechnology in the dairy industry		**Presence**	- Homework.
11	**2**	Ethical and Regulatory Issues in the Application of Nanotechnology in Food		**Presence**	**- Homework.**

12	**2**	Applications of nanobiosensors in food nanotechnology		**Presence**	**- Homework.**
13	**2**	Nanotechnology in Health and Environmental Issues		**Presence**	**- Homework.**
14	**2**	Nanotechnology in food packaging		**Presence**	**- Homework.**

Course Evaluation

Module Evaluation REVIEW COURSE					
As		**number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	**Midterm Exam**	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Nanotechnology Applications in the Food Industry-CRC Press (2018). Food nanotechnology _ principles and applications-CRC Press (2019). Handbook of Food Nanotechnology_ Applications and Approaches-Academic Press (2020).
Key References (Sources)	Nanotechnology Applications in the Food Industry-CRC Press (2018)
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	https://www.theguardian.com/what-is-nano/what-you-need-know-about-nano-food

Course Name **Manufacture of special milk and milk novelties**
Course Code: DST48136
Semester / Year : Second :Fourth
Date of preparation of this description : 3/5/2024
Available Attendance Forms: Classroom Attendance
Number of study hours (total) / 4 **Number of units (total) 2**

Name of course administrator (if more than one name is mentioned)

Name: Dr. Sadeq Dheyaa Muneer / **Email:** sadeq.muneer @fosci.uoqasim.edu.iq

Course Objectives

1-The student should have a high level of skill that qualifies him to make many types of milk for infants.
The student should have a high level of skill that qualifies him to work on low-weight infant formula processing devices.
The student should be able to manufacture milk for children with allergies to milk proteins.
The student should be able to make edible membranes to preserve food
The student should be able to make whey proteins.
Working on devices and equipment for the manufacture of dairy products for specific needs.
Producing new dairy products through some transactions and controlling the chemical components of milk

Objectives of the unit	**The student should know the types and structures of infant formula.** **The student knows how to make low birth weight and preterm infant formula.** **The student should learn how to make milk for children who are allergic to whey proteins.** **The student learns how to make lactose-free dairy.** **The student should identify the manufacture of edible membranes from milk proteins.** **The student should know how to produce whey proteins.**

Teaching and Learning Unit

Strategy	Provide students with the beginning of the semester with approved sources and summarize these sources in a full file of printed lectures. Using the power point presentation program on the displays, pen and board for the purpose of explaining the scientific material to the students. Using scientific laboratories equipped with equipment, tools and materials for the purpose of developing student learning. Conducting discussions and dialogues and using brainstorming among students. Voluntary supervision of graduation research projects for students in the fourth stage.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Introduction		Presence	- Homework.
2	**2**	Infans		**Presence**	**- Homework.**
3	**2**	Types and Structures of Infant Milk		**Presence**	**- Homework.**
4	**2**	Raw materials used in the manufacture of infant formula		**Presence**	**- Homework.**
5	**2**	Steps for manufacturing infant formula		**Presence**	- Homework.
6	**2**	Low birth-weight and premature infant formula		**Presence**	**- Homework.**
7	**2**	Midterm Exam		**Presence**	**exam**
8	**2**	Milk for children with allergies to milk proteins		**Presence**	**- Homework.**
9	**2**	Lactose-free dairy products		**Presence**	**- Homework.**
10	**2**	Casein Preparation		**Presence**	- Homework.
11	**2**	Conjugate precipitates		**Presence**	**- Homework.**
12	**2**	Preparation of eaten membranes of milk proteins		**Presence**	**- Homework.**
13	**2**	Whey Protein Products		**Presence**	**- Homework.**
14	**2**	Whey Protein Products		**Presence**	**- Homework.**
15	**2**	Whey Protein Products		**Presence**	- Homework.

Course Evaluation

Module Evaluation REVIEW COURSE					
As		number	Weight (Marks)	**Week Due**	**Relevant Learning Outcome**
Formative assessment	Quizzes	**2**	**10:10**	5 and 10.	All
	Assignments	**2**	**10:10**	2 and 12.	All
	Projects	**1**	**10:10**	continuous	All
	Report	**1**	**10:10**	13	All
Summative assessment	Midterm Exam	**2hr**	**10:10**	7	All
	Final Exam	**3hr**	**%50 %50**	16	All
Total assessment			**100% (100 Marks)**		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	All modern scientific journals on the Kokel website
Key References (Sources)	
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	www.columbia.edu

Course Name

Evaluation and development of dairy products

Course Code: DST47135

Semester / Year : Second :Fourth

Date of preparation of this description : 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) / 4

Number of units (total) 2

Name of course administrator (if more than one name is mentioned)

Name: Dr. Diaa Ibrahim Al-Badrani/ **Email:** dhiaalarabi@ fosci.uoqasim.edu.iq

Course Objectives

The student learns the sensory evaluation and quality requirements of dairy products.
The student learns about the methods of sensory evaluation of liquid milk and powdered milk
The student learns the mechanisms of sensory evaluation of cheese, fermented milk, cream and ice cream.
The student learns about the marketing requirements necessary for the process of developing milk products.
The student learns about the different definitions of the new product.
The student understands the approach to the development process and the strategies of the development process.
The student can learn about the degrees of development of different milk products.
8-The student learns about the factors related to the failure and success of the development process through its key factors.
9-The student learns about the mechanisms and methods of presenting the original and developed products in the market and the strategies followed in this regard.
10- The student understands the marketing methods of the developed milk products.

Objectives of the unit	To develop the student's skills in the indications of evaluation and development of dairy products. To understand the mechanisms for the implementation of evaluation and development of dairy products. The student learns about the different methods evaluation and development of different dai products.

Teaching and Learning Unit

Strategy	The main strategy to be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time improving and expanding their critical thinking skills. This will be achieved through classroom and interactive tutorials and by looking at the types of simple experiments that include some sampling activities that are of interest to students.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Introduction to Sensory and Quality Assessment of Dairy Products		Presence	- Homework.
2	**2**	Sensory Evaluation of Liquid Milk and Powdered Milk		**Presence**	**- Homework.**
3	**2**	Evaluation of dairy products		**Presence**	**- Homework.**
4	**2**	Marketing requirements		**Presence**	**- Homework.**
5	**2**	New Product Definition		**Presence**	- Homework.
6	**2**	Introduction to the Development Process		**Presence**	**- Homework.**
7	**2**	**Midtram exam**		**Presence**	**- exam.**
8	**2**	Product Development Score		**Presence**	**- Homework.**
9	**2**	Key factors for success		**Presence**	**- Homework.**
10	**2**	Methods of presenting an original product in the market		**Presence**	- Homework.

11	**2**	New Product Setup		**Presence**	**- Homework.**
12	**2**	Change through services		**Presence**	**- Homework.**
13	**2**	New products		**Presence**	**- Homework.**
14	**2**	Marketing Methods for Product Development		**Presence**	**- Homework.**
15	**2**	Product life cycle		**Presence**	- Homework.
16	**2**	Final exam			-exam

Course Evaluation

Module Evaluation REVIEW COURSE					
As		**number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	**Midterm Exam**	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Dairy Product Evaluation – Dairy Product Development
Key References (Sources)	**Dairy Processing**
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	http://80.191.248.6: 8080/dl/The % 20Sensory 20Evaluation % 20of % 20Dairy % 20Products Springer-Verlag.

Course Name

Professional Ethics

Course Code: DST47034

Semester / Year : Second :Fourth

Date of preparation of this description : 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) / 2

Number of units (total) 2

Name of course administrator (if more than one name is mentioned)

Name: Dr. Bashaer Saleh Mahdi / **Email:** foodhealthandnutritionexam@uoqasim.edu.iq

Course Objectives

Giving an idea of the concept of professional ethics
Distinguishing between the general elements of professional ethics
Determine ways to consolidate the ethics of the profession
Identifying the most important challenges to professional ethics
Clarifying External EthicsChallenges
Enabling the student to learn about social responsibility
Defining the basics of the code of conduct at work
Identifying the moral responsibility in evaluating behavior
Giving an idea of the philosophy of moral responsibility
Clarifying the Foundations of Ethical Responsibility Development
Identifying the administrative corruption of theemployee
Determining the Importance and Objectives of Professional Ethics
Distinguishing the basic pillars of professional ethics

Objectives of the unit	Determine what is right, what is wrong, and what the employee's behavior should be under new standards. Assisting the public in clarifying what is the employee's right and duty in performing his work when providing services to them, which makes it easier for them to be held accountable when deviating from these ethical limits. Ensuringthat the employee behaves objectively and impartially in public affairs. Ensuring a balance between ethical provisions and the need to preserve the freedoms and rights of employees. Removing the authoritarian character that a department can have.

Teaching and Learning Unit

Strategy	Contributes to the construction of acceptable policies with high specifications in institutions, draws the features of progress, development and advancement of future employees, and establishes a good system for practicing various professions in the future for the purpose of total quality as one of the most applied strategies in the world, which is concerned with the various internal and external dimensions of the institution, including many methods that can help institutions achieve various goals, improve the quality of services, consolidate the cultural factor, and promote commitment to professional ethics.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	The Concept of Professional Ethics		Presence	- Homework.
2	**2**	General Elements of Professional Ethics		**Presence**	**- Homework.**
3	**2**	Means of instilling professional ethics		**Presence**	**- Homework.**
4	**2**	Challenges and their impact		**Presence**	**- Homework.**

		on professional ethics			
5	**2**	Challenges and their impact on professional ethics (external challenges)		**Presence**	- Homework.
6	**2**	SocialResponsibility (Its concept , types , elements , components)		**Presence**	**- Homework.**
7	**2**	Midterm exam		**Presence**	**exam**
8	**2**	Employment Code of Conduct and Work Ethics		**Presence**	**- Homework.**
9	**2**	Ethical responsibility and its impact on the evaluation of behavior		**Presence**	**- Homework.**
10	**2**	Philosophy of Moral Responsibility		**Presence**	- Homework.
11	**2**	Foundations for Developing Ethical Responsibility		**Presence**	**- Homework.**
12	**2**	Administrative corruption of the public official		**Presence**	**- Homework.**
13	**2**	Importance and Objectives of Professional Ethics		**Presence**	**- Homework.**
14	**2**	The main pillars of professional ethics		**Presence**	**- Homework.**
15	**2**	exam		**Presence**	exam

Course Evaluation

Module Evaluation REVIEW COURSE					
As		**number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20/20	5 and 10.	All
	Assignments	2	10:10	3 and, 9.	All
	Report	1	10:10	14	All
Summative assessment	**Midterm Exam**	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Professional Ethics , Osama Abdul Karim, 2021 Ethics of the profession between the hoped-for reality, Abbas Mahmoud, 2019
Key References (Sources)	Professional Ethics, 2009 Principles

Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	https://www.theiia.org/globalassets/documents/standards/code-ethics/code-of-ethics-arabic.pdf.

Course Name
Filling and packing technology
Course Code: DST47133
Semester / Year : Second :Fourth
Date of preparation of this description : 3/5/2024
Available Attendance Forms: Classroom Attendance
Number of study hours (total) / 4 Number of units (total) 2
Name of course administrator (if more than one name is mentioned)
Name: Mr. Sara Karim Nayef/ Email: sarra@fosci.uoqasim.edu.iq

Course Objectives

Knowing the history of the development of packaging science.
Knowledge of the main materials used in packaging operations.
Knowing the types of machines used for this purpose.
Knowing the methods of manufacturing different cans.
Ability to prepare edible containers.
Knowing the symbols of plastics and their recyclability.
Knowing some laboratory methods to measure the characteristics of food products packages.
Distinguishing the basic requirements of each food product.

Objectives of the unit	Identify the most important functions of food packages and their types. Familiarize yourself with packaging systems in general and for food in particular. Identify the characteristics of the packages of agricultural and food products and the manufacturing processes based on them. Understanding the integrated system between the package or container and the food requirements Studying nesting permeability and containers with migration rates for their content and preservation period. Study of modern packaging technologies (modified air packaging, microwave packaging, antibacterial packaging) Identifying the characteristics of special food packages: modified air packages - microwavecontainers - freezing containers - permeability to gases and water vapor

Teaching and Learning Unit

Strategy	Using paper lectures so that the student can read and save them. Using YouTube to view videos about the lecture. Visiting some food packaging factories and their laboratories . -Watching his eyes for some of the available means and tools related to the material.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Packaging history and consumer psychology		Presence	- Homework.
2	**2**	Conceptsof packaging and its economic dimension		**Presence**	**- Homework.**
3	**2**	Environmental and health impact of packaging materials		**Presence**	**- Homework.**
4	**2**	Main packaging materials and recycling		**Presence**	**- Homework.**
5	**2**	Food packaging, characteristics and shapes		**Presence**	- Homework.
6	**2**	Manufacture of food packages (metal ,glass, plastic and paper)		**Presence**	**- Homework.**
7	**2**	Midterm Exam		**Presence**	**exam**
8	**2**	Edible membranes + **smart (efficient)** packaging operations		**Presence**	**- Homework.**
9	**2**	Packing in a modified atmosphere and packing in a vacuum atmosphere		**Presence**	**- Homework.**
10	**2**	Antimicrobial Packaging Systems		**Presence**	- Homework.
11	**2**	Films and Food Covers		**Presence**	**- Homework.**
12	**2**	**Container Quality Tests**		**Presence**	**- Homework.**
13	**2**	**Migration of packaging**		**Presence**	**- Homework.**

		materials for food			
14	**2**	Methods and specifications of sterile packaging (examples and study of manufacturing production lines)		**Presence**	**- Homework.**
15	**2**	Traditional packaging methods and specifications (examples and study of manufacturing production lines)		**Presence**	- Homework.

Course Evaluation

Module Evaluation REVIEW COURSE					
As		**number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	**Midterm Exam**	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	**Packing and packaging of food and dairy products by Dr. Nabil Muhanna and Dr. Laila Al-Sibai 2000** - Specialization of Food Processing Technology/ Foundations of Food Science/1429 AH Edition.
Key References (Sources)	**- The impact of packaging on the marketing of food products manufactured in Khartoum, Sudan, by Yasser Ahmed Abdel Ahlal Al-Tom Ahmed Awad Ibrahim Al-Nour Suhair Osman Mohamed Babiker. Journal of Iraqi Agricultural Sciences – 44(4 :)499-808 , 2013**
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	

Course Name Research Methodology
Course Code: DST47032
Semester / Year : Second :Fourth
Date of preparation of this description : 3/5/2024
Available Attendance Forms: Classroom Attendance
Number of study hours (total) / 4 Number of units (total) 2
Name of course administrator (if more than one name is mentioned)
Name: Dr. Sharafuddin Thamer/ **Email:** Dr.sharaf@biotech.uoqasim.edu.iq
Course Objectives

Giving a preliminary idea of the method of preparing scientific research.
Distinguish between different methods of scientific research.
Determine ways to write scientific research sources.
Learn about the different ways of ordering the rose program.
Explanation of the methods of preparing the PowerPoint program.
Enabling the student to throw seminars in front of a group of professors and students.

Objectives of the unit	Enabling the student to know how to write structured scientific research. Researching a new topic that no one has previously researched , and extracting new judgments for it. Knowledge of modern discoveries, and the development of ancient discoveries. Progress and development of students in all new lifestyles and moving away from the stereotypicallifestyle. Ability to give a presentation in front of a group of students giving the student.

Teaching and Learning Unit

Strategy	The researcher chooses the most appropriate methods to help him carry out the research, and this curriculum has facilitated this by developing a set of organized procedures for the research. The study methodology is a carefully studied steps to reach the facts related to the subject of scientific research

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Introduction		Presence	- Homework.
2	**2**	Scientific Research Approach		**Presence**	**- Homework.**
3	**2**	Methods Of Writing A Summary In Scientific Research		**Presence**	**- Homework.**
4	**2**	Methods Of Introduction To Writing Scientific Research		**Presence**	**- Homework.**
5	**2**	Method Of Writing Materials And Methods In Scientific Research		**Presence**	- Homework.
6	**2**	Method Of Writing Results In Scientific Research		**Presence**	**- Homework.**
7	**2**	Midterm Exam		**Presence**	**exam**
8	**2**	Methods Of Writing The Conclusion In Scientific Research		**Presence**	**- Homework.**
9	**2**	Methods Of Writing References In Scientific Research		**Presence**	**- Homework.**
10	**2**	Endnote Application For Writing And Arranging References		**Presence**	- Homework.
11	**2**	Using The Word Program In Writing Research Papers		**Presence**	**- Homework.**
12	**2**	Using Power Point In		**Presence**	**- Homework.**
13	**2**	Academic Research		**Presence**	**- Homework.**
14	**2**	Seminars And Preparation Of Eastern Scientific Research Models		**Presence**	**- Homework.**
15	**2**	Seminars And Preparation Of Scientific Research Models		**Presence**	- Homework.

Course Evaluation

Module Evaluation
REVIEW COURSE

As		number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	20/20	2 and 6	All
	Assignments	2	10:10	3 and 5.	All
	Report	1	10:10	10	All
Summative assessment	Midterm Exam	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	Methodology of Scientific Research, Rima Majed, 2018, How to write references in scientific research,Fawzi Asim, 2020
Key References (Sources)	Methods of Scientific Research,Mahfuz Judeh
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	https://www.researchgate.net/publication/320516064

Course Name

Cheese Processing

Course Code: DST47131

Semester / Year : Second :Fourth

Date of preparation of this description : 3/5/2024

Available Attendance Forms: Classroom Attendance

Number of study hours (total) / 7

Number of units (total) 3

Name of course administrator (if more than one name is mentioned)

Name: Dr. Diaa Ibrahim Al-Badrani/ **Email:** dhiaalarabi@ fosci.uoqasim.edu.iq

Course Objectives

The student learns to classify cheese and its definitions and distinguish between its different types.
The student learns about the scientific basis for making cheese and methods of cheese
The student learns the mechanisms of receiving milk for a cheese maker and the required tests upon receipt
The student learns about the types of primers and colors and how to add them.
The student learns about the methods of extracting rennet and the types of rennet.
The student understands the theory of cheese in its enzymatic and chemical stages.
The student can identify the extent of thrombus formation and the correct whey drainage conditions
8-The student learns about the types of cheeses that are made using acid instead of rennet.
9-The student learns about the mechanisms of ripening cheese inside the ripening rooms and learn about the ripening conditions.
The student can understand how the ultrafiltration method is used in cheese making and its benefits and disadvantages.
11- The student learns how to judge and grade different types of cheeses and methods of evaluating them sensually.
12- The student learns how and how to manufacture processed cheese and the materials included in the manufacturing mixture.

Objectives of the unit	The student learns about the chemical composition and physical properties of milk prepared for cheese making. The student learns about the chemical composition and physical properties of cheese. The student can distinguish between different types of cheeses. The student learns about the mechanisms and methods of manufacturing natural cheeses. The student learns about the mechanisms and methods manufacturing processed (cooked) cheeses.

Teaching and Learning Unit

Strategy	The main strategy to be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time improving and expanding their critical thinking skills. This will be achieved through classroom and interactive tutorials and by looking at the types of simple experiments that include some sampling activities that are of interest to students.

Course Structure

Fifteenth	Hours	Intended Learning Outcomes	Module / Course Name or	Learning method	Valuation Method
1	2	Definition Of Cheese, Industry Development And Classification		Presence	- Homework.
2	**2**	The Scientific Basis Of Cheese Making		**Presence**	**- Homework.**
3	**2**	Receiving Milk		**Presence**	**- Homework.**
4	**2**	Add Prefix And Color		**Presence**	**- Homework.**
5	**2**	Rennet Extraction Methods		**Presence**	- Homework.
6	**2**	Cowardice Theory		**Presence**	**- Homework.**
7	**2**	**Exam**		**Presence**	**exam.**
8	**2**	Whey Drainage		**Presence**	**- Homework.**
9	**2**	Cheese Coagulated With Acid		**Presence**	**- Homework.**
10	**2**	Cheese Ripening		**Presence**	- Homework.
11	**2**	Uf Filter		**Presence**	**- Homework.**
12	**2**	Cheese Judging And Grading		**Presence**	**- Homework.**
13	**2**	**Mozzarella**		**Presence**	**- Homework.**
14	**2**	Jadar Cheese And Kashkaval		**Presence**	**- Homework.**
15	**2**	Processed Cheese		**Presence**	- Homework.
16	**2**	Recent Developments In Cheese Processing		**Presence**	- Homework.

Course Evaluation

Module Evaluation REVIEW COURSE					
As		**number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10:10	5 and 10.	All
	Assignments	2	10:10	2 and 12.	All
	Projects	1	10:10	continuous	All
	Report	1	10:10	13	All
Summative assessment	**Midterm Exam**	2hr	10:10	7	All
	Final Exam	3hr	%50 %50	16	All
Total assessment			100% (100 Marks)		

The grade of 100 is distributed according to the tasks assigned to the student such as daily preparation, daily, oral, monthly and written examinations and reports ..... etc.)

Learning and Teaching Resources

Required course books (methodology if any)	**Cheese and fermented dairy**
Key References (Sources)	**Making cheese and its types in the world**
Recommended books and supporting references (scientific journals, reports.....)	
Electronic references, websites ,.....	https://agro.afacereamea.ro/wp-content/uploads/carti/Technology % 20of % 20Cheesemaking.