



Damanshour University
Faculty of Agriculture



Internal Rules & Regulations

**For the Bachelor degree in Agricultural
Sciences**

Quality and Safety of Food Manufacturing

**A special Program in English
According to the credit hours system**

2025

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Chapter One

- **Introduction to the Program and College**
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- **General Objectives of the Program**
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Chapter One

Introduction to the College and the Program – Program Mission and Vision – General Objectives and Philosophy of the Program – Learning Methods and Future Ambitions of the Program

Introduction to the Faculty of Agriculture

- The Faculty of Agriculture in Damanhour was established as a branch of the Faculty of Agriculture – Alexandria University in the academic year 1983/1984 by admitting 50 students in the first year, and this batch graduated in the academic year 1987/1988, so it is one of the oldest colleges at Damanhour University.
- Issuance of the Presidential Decree No. 507 of 1988 on the establishment of the faculty and its independence from Alexandria University within one of the faculties of the university's branch in Damanhour.
- The issuance of the Presidential Decree No. 203 of 2010 to establish Damanhour University as an independent university and separate it from Alexandria University, and the faculty became one of the faculties of Damanhour University, and in 2013, Building No. (2) was allocated in the Abadia Complex to become a respected scientific edifice.
- The Faculty of Agriculture - Damanhour University consists of eight academic departments: Department of Natural Resources and Agricultural Engineering, Department of Economics, Agricultural Extension and Rural Development, Department of Food and Dairy Science and Technology, Department of Plant Pathology, Department of Animal and Poultry Production, Department of Plant Protection, Department of Horticulture and Department of Crops.
- In addition to two special programs, namely the Poultry Production Program (by the issuance of the Ministerial Resolution No. 307 on 13/2/2011 the Executive Regulations), and the Biotechnology Program (by the issuance of the Ministerial Decision No. 2268 on 27/7/2020 the Executive Regulations).
- Based on all this, it has become necessary to complete the development, restructuring and updating of programs to finally reach the most important goal of making the Faculty of Agriculture at Damanhour University an effective institution capable of achieving its goals and developing itself, which keeps pace with the changes locally and internationally.

Quality and Safety of Food Manufacturing Program

- The Quality and Safety of Food Manufacturing Program is a unique scientific program that produces leaders and influencers in domestic and international food and dairy safety and quality policy and practices through the application of current science and research in the field of animal and plant health, microorganisms, and environmental health in relation to the human food chain.
- The program is designed to provide a true holistic food safety approach to food chain that incorporates to the present and past harvest stages of food production, crop safety, animal welfare and economies of the supply chain.

- The quality and safety of food manufacturing is an interdisciplinary field that requires knowledge from different disciplines. At the same time, the philosophy of teaching agriculture has changed from the impact of the environment on agriculture on the environment. Unfortunately, this is not reflected in the current agricultural curricula and programmes aimed at food security and not necessarily food safety.
- The possibility of educating and training competent professionals in the field of quality and safety of food processing has become a major concern, as the safety of our food supply remains a burden on public health and/or the economy that needs to be addressed by competent and trained professionals.
- It is known that safer food saves lives with every bite one eats, you are likely to get sick from microbiological or chemical contamination, as billions of people are put at risk every year, millions get sick every year, and many die as a result of consuming unsafe food. Consumers, governments and others play an important role in ensuring food safety and quality. Foodborne illnesses are a growing public health concern around 420,000 deaths annually worldwide and affect hundreds of millions of people globally As a direct result of unsafe food poisoning in free-market societies, the ultimate responsibility for investing the material and administrative resources needed to implement appropriate controls rests with the food industry.
- Access to safe food is a global concern, but industrial methods of food production and the globalization of the food chain increase the likelihood of contamination, leading to larger and more serious accidents, as well as providing opportunities for emerging pathogens and economically motivated fraud.
- Controlling food contamination requires a multidisciplinary approach and collaboration between government authorities and the food industry.
- In this program the student will have the opportunity to develop and understand the relationship between food and public health and discover the scientific, technical, administrative, political and legislative factors that affect not only food security but also food safety.

Program Vision

Achieving the vision of the college through excellence in specialized educational programs to prepare qualified cadres scientifically and practically to compete locally and internationally to achieve safe and sustainable food development and achieve excellence in the field of food and dairy quality and safety.

Program Mission

Preparing professionals and researchers at a scientific and technical level that keeps pace with scientific and research developments, and who are qualified to work in the field of food processing, food and dairy safety and quality, and who are able to participate effectively in national and regional projects, and prepare research cadres

with distinguished capabilities in the implementation of scientific research and applied projects.

Program Objectives

The Quality and Safety of Food Manufacturing Program aims to:

1. Enabling the farm-to-table food industry to meet international food and dairy safety measures.
2. Provide a scientific basis for industry to select and implement measures that control the risks of concern in a particular food product or food manufacturing process.
3. Enable regulators to develop and implement better inspection procedures based on GAP, GHP, GMP, and HACCP systems.
4. Controlling and fighting foodborne illnesses across the food chain.
5. Improve public health awareness and consumer behavior through policy awareness and the adoption of appropriate and effective interventions.
6. Conduct research in the field of risk assessment to create a risk-based culture to identify MRL for various food contaminants and inspection standards for food establishments.

Program Philosophy

The philosophy of the Quality and Safety of Food Manufacturing Program is based on:-

1. Providing courses that provide up-to-date knowledge, skills, and values related to the quality and safety of food processing.
2. Prepare graduates with a strong knowledge of practical practices in the field and how to link practical performance in accordance with the required professional values and ethics.
3. Produce safe and healthy food.

Suggested teaching and learning methods

1. Using lectures to present and clarify the basic concepts related to the processing, quality and safety of food and dairy that can be used to meet the requirements of achieving knowledge of modern technologies as well as finding a real concept and practical application of both quality assurance, quality control and food safety based on the study and understanding of local and international standards, measurements and systems in this field to meet the market demand of this type of graduates.
2. Students will be required to conduct research on the technology of the food and dairy industry, post-harvest technology of agri-food products, as well as on modern quality systems and their actual application methods to achieve their goal, and this will enhance the students' chances of being strongly present in the labor market in this field.
3. Using modern methods in educational technology through means such as Power Point presentations (PPT), interactive videos, and various educational websites to illustrate modern methods of manufacturing food and dairy.
4. Use of extended and mini-panel discussions.

- Field visits to food companies, dairy factories, laboratories and research centers for scientific and practical benefit.
- The program will organize seminars and discussions of work lessons to transfer information and technology to and from the community and disseminate everything new in the field of food technology and modern quality systems in the field of food, as well as the program will organize training programs for students through field courses in various food and dairy factories, and this will enhance the goal of the program in practical and field application in this field.
- Self-evaluation of students to follow up on students' performance on an ongoing basis and provide students with learning skills.

Future Ambitions of the Program

- To be a distinguished program at the local and regional levels.
- To be attractive to Egyptian and non-Egyptian students for its important role in the future, innovation and development in the field of food and dairy safety and quality.

Academic Structure Serving the Program:

First: Human Resources

The academic structure that serves the program includes 19 faculty members and 7 assistant faculty members, and the following table shows their different specializations. This is in addition to the faculty members from related disciplines and other scientific departments at the college and the university.

Table (1): Faculty Members and Associate Staff of the Program

S.N	Name	Job/specialization	State of obtaining the Ph.D
1	Prof. Dr. Hamid Morsi Zeina	Professor of Food Science and Technology	Egypt
2	Prof. Dr. Entesar Ibrahim Rabie	Professor of Pesticide Chemistry and Toxicology	Belgium
3	Prof. Dr. Mohamed Abdel Raouf Ouraish	Professor of Food Science and Technology	Germany
4	Prof. Dr. Sherif Mesbah Shamsia	Professor of Dairy Science and Technology	Egypt
5	Prof. Dr. Abeer Mohamed Abd-Elhamid	Professor of Dairy Science and Technology	Egypt
6	Prof. Dr. Atef Khedr Nassar	Professor of Pesticide Chemistry and Toxicology	Canada
7	Prof. Dr. Mahmoud Abd El- Gelil Rosen	Professor of Food Science and Technology	Egypt
8	Prof. Dr. Ahmed Mohamed Helal	Professor of Dairy Science and Technology	Italy
9	Prof. Dr. Hala Mahmoud Bayoumi	Professor of Food Science and Technology	Egypt
10	Prof. Dr. Sahar Abdullah Nasser	Associate Professor of Dairy Science and Technology	Egypt
11	Prof. Dr. Ismail Jalal Borai	Associate Professor of Food Science and Technology	Egypt

S.N	Name	Job/specialization	State of obtaining the Ph.D
12	Dr. Souad Tawfiq Morsi	Lecturer of Food Science and Technology	Egypt
13	Dr. Sameh Saeed Yacoub	Lecturer of Dairy Science and Technology	Egypt
14	Dr.Ghada Mohamed Abd-Elhamid	Lecturer of Food Science and Technology	Egypt
15	Dr.Khaled Sobhi Nassar	Professor of Dairy Science and Technology	China
16	Dr.Eman Saad Ragab	Lecturer of Dairy Science and Technology	China
17	Dr.Ahmed hamid Zeina	Lecturer of Food Science and Technology	Egypt
18	Dr.Rghda Awad Abd-Elfattah	Lecturer of Food Science and Technology	Egypt
19	Dr.Sarah Reda Al-Aswad	Lecturer of Dairy Science and Technology	Egypt
20	Sameh Gamel Sharaf El-din	Assistant teacher	Egypt
21	Mahmoud Abd-Elghafar Abd-Elsalam	Assistant teacher	Egypt
22	Israa Ibrahim Fathi Mohamed	Demonstrator	Egypt
23	Reda Abd-Elaziz Mohmoud Shaheen	Demonstrator	Egypt
24	Eman Khaled Hamid Osman	Demonstrator	Egypt
25	Israa Fayz Abd-Elmonem	Demonstrator	Egypt

Material resources

The first priority of the program is to graduate qualified scientific cadres that meet the requirements and needs of the Egyptian labor market from managerial graduates who have the ability to compete locally, regionally and internationally in the field of quality and safety of food and dairy during manufacturing and who are able to deal with modern technologies, systems, standards and specifications that achieve the required level of quality and safety of the food product by providing the appropriate climate to complete learning processes in an advanced manner in line with the educational systems of international universities to keep pace with scientific and technical developments Through education, research, field training, and external communication to link scientific research to the environment and society in a way that achieves sustainable development.

The financial resources available at the college to implement the program

S	description	N
1	Lecture Halls	16 Halls

2	Student Labs	2 Labs
3	Research Laboratories	6 Lab
4	Faculty Offices	50 Offices
5	Crop Farm	1
6	Fruit Farm	1
7	Fish farm	1
8	Poultry Farm	1

Exploiting the College's Farm to Serve the Educational Process

Students will conduct research and scientific training activity related to post-harvest technology on some vegetable and fruit crops at the college's farm in Al-Bustan in Beheira Governorate.

Laboratory of the Department of Food and Dairy Science and Technology

The Department of Food and Dairy Science and Technology has a laboratory with many devices for chemical analysis, microbiological analysis, and the natural properties of food and dairy. Students will take various tests and practical applications in this laboratory.

Library Hall

The Department of Food and Dairy Science and Technology will organize seminars and discussions in the library hall and use the Egyptian Knowledge Bank to transfer information and technology and train the students of the program on effective communication and learning about everything new and of interest to the students of the program.

Laboratories of the various departments and related authorities

The faculty includes many laboratories to estimate the quality qualities of food and raw materials of plants, animals and microbials, which are:

- Biotechnology Laboratory
- Land Department Laboratory
- Horticulture Department Laboratory
- Plant Protection Department Laboratory

Computer Lab

8 greenhouses

In addition to cooperating with private companies and farms in the field of food and dairy industries.

Areas available for the work of the graduates of the program:

The program will equip graduates with the basic knowledge and experience that will enable them to influence and develop the safety and quality of food and dairy at different levels of regulation. It will provide graduates with the right foundations for professional development or preparation for new careers in the quality and safety of food processing whether in government agencies, industry or research.

The graduate can work in the following fields:

- 1- Food & Dairy Inspector
- 2- Quality Controller in Food and Dairy Factories
- 3- Director of Basic Food Production
- 4- Food Processing Manager
- 5- Fermented Beverages & Soft Drinks
- 6- Health and Environmental Safety
- 7- Health Expert
- 8- Customer Assistant
- 9- Quality Auditor

Standard Academic Standards for Program Graduates (General Specifications and Special Specifications)**Graduate Specifications:**

A graduate of the Quality and Safety of Food Manufacturing Program should be able to:

- 1- Evaluates food and dairy products.
- 2- It manufactures food, dairy, and various food products.
- 3- Applies Total Quality Management in Food and Dairy Processing.
- 4- It tracks contamination throughout the food chain.
- 5- He examines food and milk and detects corruption and adulteration.
- 6- Identifies food and milk contamination, its types, and its effects.
- 7- Selects the best ways to transport and handle food, dairy, food products and foodstuffs.
- 8- Implements food and dairy safety and quality procedures and systems at all stages of the food chain (HACCP , ISO).
- 9- Implements food laws and regulations (local, regional, and international).
- 10- It applies different methods of food and dairy preservation.
- 11- It chooses the best methods for waste and wastewater treatment.
- 12- GAP is applied in agriculture and GMP in food and dairy processing
- 13- Screens for foodborne illnesses, milk and dairy products.
- 14- Applies proper hygiene procedures in food establishments.

- 15- Knows the importance of documentation and management of records that may be kept.
- 16- Applies the general principles of good personal hygiene and how to monitor the risks associated with poor personal hygiene.
- 17- Recognizes hazards at work, including various pests or pollutants.
- 18- Report perceived hazards to the Food Safety Supervisor.
- 19- Understands the importance of awareness of the application of food and dairy safety and management system in food factories.
- 20- Identifies effective corrective actions to provide consultancy and services.
- 21- Understand the importance of effective cleaning and disinfection in food venues.
- 22- Understands different cleaning methods, effects and uses.
- 23- Identifies the costs of good and bad safety practices for businesses.

Standards derived from the National Authority for Quality Assurance of Education (NARS) for the graduates of the Quality and Safety of Food Manufacturing Program :

Graduates of the Quality and Safety of Food Manufacturing Program must acquire the following:-

First: Knowledge and Understanding:

- 1- Explains the basic terminology in the field of food science, food and dairy safety and quality.
- 2- It explains the basic ingredients, natural and chemical properties of food and dairy.
- 3- Defines the foundations of thermodynamics and key mechanical processes in food processing and their impact on the quality, safety and shelfability of the final product.
- 4- Knows the basics of manufacturing and storing food products safely.
- 5- Knows the basics of transporting and handling food and reducing the damage caused by it.
- 6- Understand the basics of the safety of food, dairy and dairy products chemically, microbially and naturally.
- 7- Understands the basic factors associated with the achievement of Quality Assurance, which are represented in the theoretical and practical studies of modern quality systems in food processing.
- 8- Differentiates between different control and quality systems and defines the scope, role, and importance of each.
- 9- Defines domestic and international legislation governing the production, handling and processing of food and dairy.
- 10- Understands the fundamentals of economic management, handling raw material sources, and recycling waste safely, compliant with local and international legislation, and environmentally friendly.
- 11- Knowledge of specialized theories, basics, and knowledge in the field of food and dairy processing, safety, and quality, and related fields.

- 12- Explains the ethical and legal principles of professional practice in the field of food and dairy manufacturing, safety and quality.
- 13- The role of food factories, food processing methods, and food microbiologists in the safety and quality of food and dairy and quality assurance is known.
- 14- Knows the principles and fundamentals of quality in professional practice in the field of food and dairy manufacturing, safety and quality.
- 15- Recognizes the impact of professional practice on the environment and works to preserve and maintain the environment.
- 16- Understands the natural, chemical, and microbial properties of food ingredients and their reactions and how to control these reactions.
- 17- Knows the different technological methods of food processing and preservation and their scientific basics.
- 18- Knowledge of food health, common diseases, how to prevent or resist them, and ways to treat them.
- 19- Assesses risks, methods of preventing accidents, safety and quality factors of food, dairy, and food factories, and quality assurance and its benefits.
- 20- Explains the concepts of Total Quality Management in Food and Dairy Factories.
- 21- It differentiates between food and dairy packaging materials and machinery and their properties.
- 22- It differentiates between post-harvest transactions and methods of guaranteeing, safe, and quality of food and dairy.
- 23- It enumerates the health conditions of food, inspections and evaluations, and the basics of transporting and handling foodstuffs.
- 24- Knows the basics of food processing engineering.
- 25- Knows the types of equipment, production lines, methods of maintenance and safety.
- 26- Enumerates the health requirements for food and dairy factories.
- 27- Enumerates the sensory properties of food, dairy, its products, and the methods of evaluating them.
- 28- Explains legislation, food laws, and bodies responsible for them, as well as international trade agreements.
- 29- Understands how by-products and food and dairy factory waste are recycled and processed from an environmental perspective.
- 30- It enumerates the methods of analysis and evaluation of food, dairy and dairy products.
- 31- Knows the basics of human nutrition.
- 32- It enumerates the types of additives, their properties, their role, and the limits of their use.

Second: Thinking Skills

- 1- Demonstrate and apply intellectual skills to solve problems and create solutions related to the quality and safety of food and dairy.

- 2- Forming a positive trend towards the necessity of economic quantitative production while maintaining the quality and safety of dairy food.
- 3- Self-assessment and identification of his/her personal educational needs.
- 4- Using different sources to obtain information and knowledge.
- 5- Lead a team in familiar professional contexts.
- 6- Continuous self-learning in his/her field of specialization.
- 7- Preparing and writing scientific and technical reports
- 8- It has positive attitudes towards spreading the culture of using modern technology, quality control, food and dairy safety, working in good health conditions, paying attention to general hygiene as a work method in the place, equipment and people, and finding monitoring and follow-up systems that achieve the highest efficiency continuously.
- 9- Continuous development in performance through his theoretical and practical study in the quality and safety of dairy foods.
- 10- Effective communication of various kinds.
- 11- The desire to use information technology to serve the development of professional practice.

Third: Professional and Practical Skills

- 1- Plans and monitors the manufacturing processes of various foods, dairy and dairy products.
- 2- Chemically, microbiologically, sensorily analyzes the product and raw materials and any analysis or test that achieves quality control during production, storage, or fraud detection analyses of either raw or manufactured products.
- 3- It employs basic industrial processes such as concentration, drying, and fermentation correctly, economically, and safely for health, provided that it is able to identify the health risks that may accompany some of these processes and how to avoid them.
- 4- Controls the chemical, natural and microbial spoilage processes of food, raw milk and its products and is able to detect them at all stages of production, marketing and trading.
- 5- Selects the appropriate packaging for processed foods and determines their impact on food products and their direct and indirect effects on the chemical, microbial and physical properties of the products.
- 6- Applies the means of controlling manufacturing processes within the framework of the systems for achieving and confirming the safety of production processes and the safety of the final product.
- 7- Selects and monitors appropriate storage methods and conditions for each product.
- 8- It applies quality control and quality assurance systems to all stages of production, starting from the raw material to reaching the final product, through theoretical and practical studies of the chemistry, nature, and microbiology of food and dairy, sensory evaluation, and the application of modern rules of quality and safety.

- 9- He applies the fundamentals of practical experience through training in factories that enable the graduate to achieve good performance at all stages of the production process.
- 10- Applies modern systems that are effective in the management of food and dairy factories.
- 11- Effectively deals with modern technologies in food processing as a concept, manufacturing methods, machinery, production lines, measuring and control devices.
- 12- He expresses his skills and abilities on his way to finding job opportunities as a reflection and as a result of his scientific and practical competence that matches the needs of that market.
- 13- Applies biotechnology to food and genetically engineered foods and identifies their risks and safety.
- 14- Writes, reviews and evaluates professional reports.
- 15- Analyzes food chemically, microbiologically, rheuistically, sensorily, as well as contaminants to be able to assess quality and safety.
- 16- Performs duties and activities due to prevent contamination.
- 17- Values the quality and safety of instant food.
- 18- It applies ideal manufacturing methods for various foods and dairy.
- 19- Monitors health conditions when transporting and delivering food.
- 20- It controls the processes of spoilage and spoilage that occur to raw and processed foodstuffs.
- 21- It appreciates the microbial content that causes corruption and the spread of epidemics and diseases.
- 22- Designs and implements sensory judging tests for dairy food.
- 23- It applies quality standards and ensures the safety of food and dairy.
- 24- Implements post-harvest, food and dairy safety systems and processes.
- 25- Identifies waste management and treatment systems in food and dairy plants.
- 26- Evaluates various manufacturing lines and maintenance processes related to food and dairy safety.
- 27- Manufactures and evaluates edible oils and products – cereal and candy products – fresh and processed fruits and vegetables.
- 28- Applies food inspection systems – the dangers of poisoning, health effects, their causes and how to prevent them.
- 29- Evaluates biotechnologies related to food production, processing, and preservation and potential biochemical transformations, especially in genetically engineered foods.
- 30- Can estimate the types of defects and contaminants to be able to estimate quality and safety.
- 31- Evaluates the performance of the processes for conforming to the standard specifications of both packaging, legislation and trade agreements.

- 32- Can work in a team and manage time.
- 33- Presents the results, analyzes them statistically and proposes solutions to any technical or scientific problem

Fourth: General Skills:

- 1- Teamwork.
- 2- Computer proficiency and Internet skills.
- 3- Data collection, classification, and analysis.
- 4- Interpret and describe the results.
- 5- Evaluate alternatives to reach the best results.
- 6- Ability to solve problems, make and make decisions.
- 7- Ability to communicate effectively.
- 8- Ability to think critically.

Chapter Two

Program Admission System

General Articles and Provisions

Article (1): Admission and Study System

- The official language of instruction of the program is English.
 - The Bachelor of Quality and Safety of Food Processing program accepts students who have obtained a high school diploma or its equivalent, provided that they obtain 80% or more in English language in the secondary certificate, and the program starts from the first level in English.
- **At the request of the Council of the Faculty of Agriculture, the Council of Damanhour University grants a bachelor's degree in agricultural sciences in the Quality and Safety of Food Processing program.**
- The program follows the credit hour system, which is a measure of the hours of communication between the teaching staff and the student in the classroom. **One credit hour is equivalent to the hours of communication as follows:**
 - One hour lecture per week for a 15-week semester.
 - 2-3 hours of exercise per week for a 15-week semester.
 - 2-3 lab hours per week for a 15-week semester.
 - One credit hour, i.e. a training period of three hours per week for one semester or its equivalent, such as field training, scientific trips, field studies, or other activities, shall be calculated according to the regulations of the concerned college.
 - One hour of communication is divided into 50 minutes of actual instruction and 10 minutes of rest.

Article (2): Levels of Study - Table (1)

The duration of study to obtain a bachelor's degree is four university years or when the student has completed the number of credit hours required **for graduation (137 credit hours successfully)**, and this period is divided into four levels of study, and each level includes two semesters separated by a half-year vacation, and the levels of study are determined by the number of hours that the student has successfully passed, and the student is transferred from one

level to the next when the student completes a number of hours of program requirements

Table (1) Study Levels

Student Status Student Status	Level Study Level	Number of Credit Hours
Freshman	First	--
Sophomore	Second	35
Junior	Third	71
Senior	Fourth	102
Total	--	137

Article (3): Semesters and Course Registration

The academic year consists of three semesters:

- **The first semester (autumn)** lasts for 15 weeks of teaching, followed by 3 weeks of exams, and courses are registered within three weeks before the start of the semester.
- **The second semester (spring)** lasts for 15 weeks followed by 3 weeks of exams and courses are registered within one week before the start of the semester.
- **The summer semester** is held in late June or early July (during the summer vacation) and lasts for 8 weeks followed by one week of exams, and courses are registered within a week before the start of the semester.
- Registration of courses for each student is not final until the approval of the academic advisor and the approval of the program director.
- Registration for the summer semester is optional for each individual student.

Article (4): Acceptance

1. The admission requirements set by the Supreme Council of Universities shall apply, and the Faculty Council may also admit international students under the conditions of enrollment and transfer applicable to Egyptians and with additional conditions proposed by the Faculty Council and approved by the University Council.

2. Holders of the Agricultural Secondary Diplom may be admitted in accordance with the regulations and laws regulating the same, and students who hold a diplom of technical institutes above intermediate to the second level are accepted, and admission is done through the Coordination Office and in accordance with the regulations and laws regulating them, and their clearing is applied in accordance with the rules of the Supreme Council of Universities.

Article (5): Specializations and Programs of Study

- The student chooses the Food Quality and Safety Program starting from the first level according to a study plan from a group of courses that include all the graduation requirements that the student must pass successfully, to obtain the degree in the specialization in which he is enrolled.

Article (6): Duration of Study

- The minimum permissible study period depends on the duration of study in the program, which is from 3.5-4 years (three and a half to four academic years 7-8 semesters) provided that all graduation requirements are met.
- The maximum allowed study period is twice the number of semesters scheduled for study (sixteen semesters, i.e. eight academic years), and it includes semesters that are frozen for reasons accepted by the university, after which the student is dismissed from the university.

Article (7): Conditions for Registration of Courses

The student shall register courses with a minimum of 12 credit hours and a maximum of 21 credit hours per semester, after the approval of the academic advisor and in accordance with the following rules:

- 1- Up to 18 credit hours, for students with a cumulative score of 2.0 or greater and less than 3.0.
- 2- Up to 21 credit hours, for students with a cumulative score of 3.0 or higher.
- 3- Up to 14 credit hours, for students with a semester GPA of less than 2.0 and an academic warning.

- 4- The student can register for courses in the summer semester up to 6 credit hours or two courses, whichever is greater, and after the approval of the academic advisor.
- 5- A student may enroll one additional course beyond the above limits if this will lead to his/her graduation, with the approval of the academic advisor, provided that such course is offered in his/her program.
- 6- Course registration in the study plan is available to all students in the first semester, and the previous rules apply starting from the second semester.
- 7- Late registration of courses is not considered final unless there are vacancies, and the student must abide by the recommendations of the Council of Education Affairs approved by the University Council on this subject.
- 8- Students studying without academic degrees are allowed to register for courses provided that they pay the prescribed tuition fees for these courses. The student shall receive a statement of the courses he has studied. and the grades obtained therein, in accordance with these regulations.
- 9- Students studying for the purpose of obtaining a degree and students studying non-academic grades may register as listeners in some courses, provided that there are vacancies in these courses, after paying the applicable academic service fees, and students who are registered listeners are not allowed to take the final exam of the course.
- 10- The college is allowed to determine the courses that are offered each semester and the methods of registering students in them, except for the courses that are specified as courses that require the study of other courses or that are necessary for graduation, so they must be made available for registration every semester.
- 11- The Student Affairs Council may approve the introduction of elective courses from the examples mentioned in each level/semester, and other elective courses can be added with suggestions from the concerned departmental councils and the approval of the University Council after giving the necessary justifications.

Article (8): Conditions for Granting the Degree

To grant a bachelor's degree in agricultural sciences in the Quality and Safety of Food Manufacturing Program , the student must:

- The student successfully completes the required number of credit hours in a program according to the stipulated conditions provided that the student obtains a cumulative GPA of at least 2.0 upon graduation (**Schedule 2 and 3**)
- Graduation Requirements for Obtaining a Bachelor's Degree in Agricultural Sciences, the student must pass 137 credit hours and according to what is found in the internal regulations of the college, it is distributed according to the academic standards as follows:
 - ✚ **University Requirements: 8** credit hours of general cultural and scientific courses chosen by the student from the courses offered by the university and the college, of which four hours are compulsory.
 - ✚ **College Requirements: 46** credit hours Basic Science and Fundamentals of Programs courses to help or support the understanding of the specialization are offered by most departments of the college and may include 6-9 optional credit hours to help determine the student's specialized inclinations.
 - ✚ **Requirements for the single major: 70** credit hours, distributed between compulsory courses (49 hours) that are indispensable to meet the graduate's specifications and elective courses (21 hours) from the list of theoretical and practical courses.
 - ✚ **Free Elective Courses: 6** credit hours from outside the specialization courses.
 - ✚ **Graduation Project: 4** credit hours for writing and explaining a reference article and implementing a research graduation project in a single or major major under the supervision of a faculty member.
 - ✚ **Applied and field trainings: 3** hours and are conducted in productive institutions, one of the research centers, or scientific departments of the university where the student is studying or another university.

- ✚ The minimum for theoretical courses only or theoretical and practical courses is two credit hours , while practical courses only may be one (2-3) credit hours.

Table (2) summarizes the distribution of credit hours as graduation requirements for obtaining a bachelor's degree in agricultural sciences and the number of compulsory and elective hours for each requirement:

Table 2: Credit Hours Distribution

S	Requirement	Number of Hours			Introduction to the Requirement	% based on 137
		Obligate	elective	sum		
1	University Requirements	4	4	8	the first level Mostly at	5.84
2	College Requirements	46	--	46	In the first, second and third semesters	33.58
3	Specialization Requirements	49	21	70	The student starts studying the -from the second level fourth semester	51.09
4	Free Choice	--	6	6	starts studying The student the -from the second level fourth semester	4.38
5	Field Training	3	--	3	Practical training 8 weeks after the third level	2.19
6	Graduation Project	4	--	4	Essay or Laboratory Research	2.92
		106	31	137	comprehensive	100

- The graduation project is an essential part of the graduation requirements and the graduation project can be completed in two consecutive semesters, according to the requirements of the program, and the student does not graduate unless he has completed the requirements for success in the project, and the student must have successfully passed a specified number of credit hours in order to be able to register for the graduation project. If the project is divided into two semesters, the student must study them according to their order.
- The student must perform field training as one of the requirements for obtaining the degree during the period of his studies and within the specified period.
- The student may study a number of courses at another university that has a cooperation agreement with the university regarding the transfer of credit hours, and this requires prior approval from the university, where the credit hours for these courses are included in the student's graduation requirements, provided that

the number of credit hours for these courses does not exceed half of the hours required to obtain the degree in the program.

Article (9): Code System for Courses

The attached tables (from Table No. 1 to Table No. 89) show the courses of study for the bachelor's level, the number of theoretical hours, applied lessons, and credit hours for each course, and the courses are numbered as follows:

The course number consists of five digits.

Fourth and fifth numbers (Thousands and tens of thousands)	The third digit from the right (Hundreds from 100 to 400)	The first and second digits from the right (Ones and Tens from 1 to 99)
Indicates the code of the academic department teaching the course (03)	Indicates the level from the first to the fourth	Indicates the serial number of the course
Code (00) indicates that this course is a general course (college or university requirements) and does not belong to an academic department.		

- Courses (Code 100) are mainly taught at the first level.
- Courses (Code 200) are mainly taught at the second level.
- Courses (Code 300) are mainly taught at the third level.
- courses (Code 400) are mainly taught at the fourth level.

- 1- The number indicating the course level is placed in the hundreds and then the course number in the ones and tens fields, and the department council may add new courses to the list of courses within the limits of the numbers allocated to the program after the approval of the faculty council.
- 2- Courses with odd numbers are taught in the first semester in the fall and courses with even numbers in the second semester in the spring, and the Education and Student Affairs Committee may offer the course in more than one semester based on the proposal of the departments.

Article (10): Changing or Amending the Study Program

- The student may change or amend his/her program of study during the first and second levels, after the approval of the academic advisor, the Education and Student Affairs Committee, and the College Council, provided that there are

available places and the conditions of admission to the program of specialization to which he/she wishes to transfer.

- The student studies the courses of the new program and the courses of the transferred program are not counted among the graduation requirements unless they are included in the courses of the new program.
- All courses passed by the student will be deleted from the student's record, unless they are required by the new program (major/ minor), and will not be counted in the cumulative average, and the College Council may impose additional fees for this transfer.

Article (11): Attendance

The course professor and his assistants shall record the attendance of students at the beginning of each theoretical lecture or practical period in a record prepared for this purpose by the Student Affairs, taking into account the following:

- The limit allowed for the student's absence without an acceptable excuse is 25% of the total hours of the course, and the professor of the course notifies the Student Affairs Department to warn the student twice, the first warning after the student exceeds 10% of the course hours and the second warning after exceeding the absence rate of 25%, after which the student's case is presented to the Education and Student Affairs Committee and the College Council to deprive him of completing the course study or accepting his excuse and being considered absent with an excuse.
- If the absence rate exceeds 25% in the course and the student's absence without an excuse is accepted by the Education and Student Affairs Committee and approved by the College Council, the student will be recorded as "deprived" in the course and the result of the "deprived" grade will be included in the calculation of the semester average and the student's general cumulative average .
- If the absence rate exceeds 25% and the student's absence with an excuse is accepted by the Education and Student Affairs Committee and approved by the

College Council, the student will be recorded with a grade of "Excused Absence" and the result of the grade "Excused Absence" will not be included in the semester average or the student's general cumulative average.

Article (12): Postponement, Incompleteness, and Repeated Failure

- The result of one of the courses is postponed because the student does not enter the final exam for an acceptable excuse and for a period not exceeding one semester, and the student is given a postponed grade (Postponed-PT), and the student completes the course requirements by attending the final exam of the course during the first week of the second semester directly, and if the student does not take the test, then he is considered a failure and is assigned a failing grade (F).
- If the requirements of a course are not completed due to the college, the student will be given an incomplete grade in this case, and when the course requirements are completed in the following semesters, his result will be uploaded to the system.
- If a student fails a course repeatedly, the number of times he has studied that course will be recorded in his academic record, and the passing grade obtained by him when passing the exam will be counted.

Article (13): Evaluation and Grades

- The exam of each course is evaluated from (100) hundred marks, and the student is evaluated in the theoretical and practical courses based on the elements mentioned in the following table:

Type of exam	Theoretical and Practical Course	Theoretical course only	Practical course only
theory No exam	50%	50%	--
and Final theoretical exam practical	20%	--	20%
Exam Oral Final	10%	10%	10%
theoretical exam term-Mid	10%	20%	--
- Continuous Evaluation -Applications -Duties Assignments	10%	20%	70%
exam scores Total	100%	100%	100%

- For the graduation project at the last level, which is allocated 4 credit hours, its grades are distributed by 60% on the quality of the essay or project report, 20% for oral discussion, and 20% for periodic follow-up by a faculty member.
- For the field training, he is allocated 4 credit hours, whose grades are distributed by 40% for the quality of the student's report, 40% for the report of the training supervisor, and 20% for discussion.
- The field training consists of 6 contact hours per week for a semester, which is the seventh semester at the fourth level in the training places determined by the college.
- Oral and written exams are conducted by a committee consisting of at least two faculty members, including the course teacher, and a student who is absent from the final practical exam or the final written exam is considered absent from the course, and a student who obtains a grade of less than 30% of the final exam score is considered a failure in the course.

Article (14): Field Training

- The student must undertake the field training according to the period stipulated in the program regulations, and it must be done in an industrial, agricultural, or service facility related to the student's program, and the training must be under the full supervision of the competent department. It is also possible to conduct internships within the university in a similar environment and the training is carried out according to the following rules:
 - The academic advisor appointed by the program's steering committee supervises the follow-up of the field training.
 - The contact person must be identified for the entity that is training the student.
 - The student must submit a technical report to his academic advisor at the end of the internship period.
 - At the end of the internship period, the student training entity must provide the academic advisor with a form to evaluate the student's training.

- The program regulations specify the number of weeks of training allowed at a time and the levels during or after which the training is performed.
- The student must pay the fees for supervising the field training, if any, equivalent to the fees of two credit hours, if this applies to each academic year during which the student trains.

Article (15): Adding or Deleting Courses

- A student can add a course in the first week of major semesters, or in the first three days of the summer semester.
- The student may drop the courses in which he is enrolled with a refund of the corresponding tuition fees, if any, until the end of the second week of the main semester, or the end of the first week of the summer semester.
- Adding or deleting courses should not violate the minimum or maximum number of credit hours registered for each semester.

Article (16): Withdrawal from a Course

- A student can withdraw from any course they are enrolled in during the first ten weeks of the major semester or during the first five weeks of the summer semester.
- The student will not fail in the course from which he has withdrawn, provided that the withdrawal request is completed and approved within the specified time period.
- The student receives a grade of (W) for the course from which he has withdrawn and is allowed to register for this course later on the condition that he is fully present and performs all activities including exams in the subsequent semesters.
- For the elective course, the student is allowed to change it in the subsequent semesters if he fails or withdraws from it, subject to the approval of the academic advisor and the requirements of his program.

Article (17): Incomplete Courses

- If a student does not attend the final exam of the course in a semester with an excuse acceptable to the Council of Education Affairs and approved by the University Council, the course is considered incomplete.

- The student will receive a grade of (I) in the incomplete course, until the exam is taken in this course, and if the student does not take the final exam on the next available date for the exam of this course, he will receive a grade of (F) in the course and a grade of (I) will not be included in the calculation of the student's cumulative GPA.
- The student will take the exam on the next available date for the exam, after paying the re-exam fee equivalent to the fee of one credit hour, if applicable, and the grades of this final exam will be added to the grades of the semester work to calculate the overall grade for this course.

Article (18): Evaluation of Students

- The grades of each course are distributed as percentages of the overall grade of the course, and these grades are divided into the grades of the student's activities, the scores of the mid-term exam, the scores of the practical exam, the oral exam, and the grades of the final exam.
- The course description must stipulate the distribution of grades to the different evaluation methods, and the faculty council may amend the distribution of grades for the course after coordinating with the concerned department and announcing this to students before the start of the semester.
- The student must attend at least 75% of the total hours of practice and labs for the course in order to be allowed to attend the final exam of the course.
- In order to succeed in a course, a student must obtain a minimum of 30% of the total scores of the final theoretical exam, otherwise he is considered a failure in this course regardless of the total grades obtained in this course and therefore receives a grade of (F) and this item does not apply to courses in which there is no final exam .
- A student is considered a failure in any course if he obtains less than 60% of the total grades of the course and is assigned a grade of (F) in his academic record.

- Courses for which credit hours are not allocated in the study regulations, the student's result is either failed or passed, and the student does not receive a grade, and therefore these courses are not included in the calculation of the cumulative average, and to pass these courses, the student must obtain (60%) of the course grades.

Article (19): Course Grades

- The grade of each course is calculated on the basis of the grades obtained by the student during his study of this course (assignments - mid-term exam - practical exam - oral exam - final exam) and the following table shows how the semester or total cumulative average is calculated through the grades obtained, where the student must obtain the minimum grade (D) to pass the course, which is used to calculate the student's GPA.

Table: Grades Used in Calculating the Cumulative GPA

Marks % collected	Grade	Points
More than 97%	A+	4.0
93% to less than 97%	A	4.0
89% to less than 93%	A-	3.7
84% to less than 89%	B+	3.3
80% to less than 84%	B	3.0
76% to less than 80%	B-	2.7
73% to less than 76%	C+	2.3
70% to less than 73%	C	2.0
67% to less than 70%	C-	1.7
64% to less than 67%	D+	1.3
60% to less than 64%	D	1.0
Less than 60%	F	0.0

- For other courses in which students are registered as listeners, or are required to pass only, courses for which credit hours are not allocated, and in courses that are not included in the calculation of the cumulative average. Course grades are as shown in the following Table:

Pass	P	----
------	---	------

Listener (Audit)	AT	----
Withdrawn	In	----
Incomplete	I	----
Absent	Off	----
Postponed	PT	----

Article (20): Repetition of Courses

- The College Council may, upon the recommendation of the academic advisor and the approval of the program director, determine appropriate courses to be studied by the student to raise his cumulative average, in case he succeeds in the courses and fails the cumulative average.
- A student may repeat a course and take an exam for improvement if his/her grade in that course meets the minimum pass requirement, according to the following rules:
 - The student receives the highest grade in the course after the repetition and this grade will be calculated in the student's GPA, provided that the repetition appears in the student's record.
 - The maximum number of courses that a student can repeat for the purpose of improvement is five courses during the period of his/her studies, with the exception of courses that are improved in order to get out of the academic warning or meet the graduation requirements.
 - When the student re-registers for a course to improve his cumulative average, the highest grade will be calculated.
 - In case the student fails in the repetition, his/her previous grade for the course will be canceled and will not be considered after that, and he will be considered a failure and receive a grade of (F).
 - If a student fails a course (earned an F grade), that course (full attendance and performance of all activities including exams) should be repeated in accordance with... For the following rules:
 - **The maximum grade for a rescheduled course is B+.**

- The student receives the course grade after the repetition, and this grade will be calculated in the student's GPA, provided that the repetition appears in the student's grade statement.
- The student must pay the full tuition fees for the credit hours corresponding to the courses that are returned.
- If a student repeats a course, he/she must re-evaluate all course evaluation requirements as it is fully re-evaluated.

Article (21): Dismissal from Study and Academic Warning

- A student gets an academic warning if their GPA in any major semester is less than 2.0.
- A student is dismissed from study if he or she has a semester GPA of less than 2.0 in six (6) consecutive semesters.
- A student is dismissed if his/her cumulative GPA is less than one (1.0) after the first (3) three consecutive semesters at the college and without providing an excuse acceptable to the faculty council.
- A student is dismissed from the study if he or she does not meet the graduation requirements within the maximum period of study specified for each program.
- A student will be dismissed from the study if he does not register in any courses for more than two consecutive main semesters during his study period without an excuse due to the lack of faculty council.

Article (22): Calculating the Cumulative Average (GPA)

- Course credits earned by the student are calculated as the number of credit hours for that course multiplied by the corresponding grades.
- The total points achieved by the student in any semester are calculated as the total points of the courses passed by the student in that semester.
- The student's cumulative average at the end of any semester is calculated as the total points achieved by the student in all courses studied divided by the total number of

credit hours for these courses, taking into account the rules related to the repetition and improvement of courses as follows:

$$\text{Cumulative GPA} = \frac{\sum_{\text{courses}} \text{Grade Points} * \text{Credit Hours}}{\sum_{\text{courses}} \text{Credit Hours}}$$

- The average points in the semester are calculated as the total points achieved by the student in the courses in that semester divided by the total number of credit hours for those courses.
- The graduation GPA is calculated after passing all graduation requirements and a student can only earn a bachelor's degree if he or she achieves a minimum GPA of 2.0 (Table 3).
- The rank of graduates is determined on the basis of the cumulative average of graduation, and in the case of an equal GPA, the ranking is according to the total number of grades.
- The student's transcript must include all courses that have been enrolled during the course of study, including courses in which they failed, withdrew, or improved.

Article (23): Honors

A student will receive an honors degree if he meets the following conditions:

- Maintain a semester or total GPA of at least 3.3 during the period of study in the program.
- The student must not have failed in any course during his/her period of study in the program.
- No disciplinary sanctions have been imposed on him during his period of study at the university.

Article (24): Academic Advising and Academic Record

- Each number of students shall be assigned an academic advisor who follows up the students and assists them in selecting the courses for each semester and the

number of hours in which he registers according to their abilities , readiness and circumstances , and shall be responsible for:

- Assisting students in choosing their academic track as well as in choosing courses for each semester.
- Assisting students with choosing a field training entity.
- Assisting students with the choice of graduation project.
- There may be more than one academic advisor in the program depending on the number of students enrolled in the program.
- Each student shall have a data record with the academic advisor in which the courses studied by the student shall be recorded, called the academic record, which is a statement that shows the courses studied in each semester, their symbols and numbers, grades, points, grades, grades, grades, semester and cumulative averages, semester grades and their symbols, and general grade until the student graduates from the college.
- Registration, addition, or withdrawal cards are not accepted except with the approval of the academic advisor, and the student must refer to him to consult him in his study matters and advise him to solve the problems that may be encountered by him.
- The academic advisor may ask the student to repeat courses in which the student has already passed or to ask him to enroll in additional courses, with the aim of raising the cumulative average of the required grade point average for graduation.

Article (25): Registration and Transfer to the Higher Level

- Students are registered electronically before the beginning of the semester and the registration of courses is completed in the first week of study, and in case of compelling excuses, registration may be done until the end of the fourth week (deletion and addition), and in all cases, when registering a course, it is taken into account that the student must study the previous requirement (a basic course to

understand the content of the new course determined by the internal regulations of the college), if any.

- The student will be transferred to the second level if he passes a minimum of 26 credit hours, he will be registered in the third level if he passes a minimum of 62 credit hours , and he will be registered in the fourth level if he passes a minimum of 94 credit hours.

Article (26): Appeals from the results of the courses

- The student may submit a request to review the course grades within one week of the announcement of the result, after paying the prescribed fees.
- In the case of a public complaint about a course, the relevant committee reviews the students' grades and makes a decision on the grades of that course.

Article (27): Transfer of Students between the Credit Hours System and the Semester System

- It is allowed to transfer students from another program that operates on a semester basis to any of the programs listed in this regulation, in accordance with the university and program admission regulations.
- A clearing is made between the courses that the student has already passed in the semester system programs and the equivalent courses in the programs available in these regulations.
- The following table uses the calculation of student grades as well as equivalent .student transfers from the semester system to the credit hour system grades when a

From semester-based system	To credit-hour system	
Equivalent percentage	Points	Grade
More than 95%	4.0	A+
90% to less than 95%		A
85% to less than 90%	3.7	A-
80% to less than 85%	3.3	B+
75% to less than 80%	3.0	B
71% to less than 75%	2.7	B-
68% to less than 71%	2.3	C+

65% to less than 68%	2.0	C
60% to less than 65%	1.7	C-
55% to less than 60%	1.3	D+
50% to less than 55%	1.0	D
Less than 50%	0.0	F

Article (28): Academic Warning and Supervision

- If the student obtains a cumulative GPA of less than 2, a first warning is issued by the Faculty Council.
- If the student's cumulative GPA is less than 2 for the second semester, a second warning is warned, and the student is considered an academic proctor, and he is only allowed to register for the minimum hours, which is 12-14 credit hours.
- A student who does not achieve a cumulative GPA of 2 or more when completing the graduation requirements must re-register in a number of courses with a maximum of 12-14 credit hours in one semester and obtain the full grade in these courses until he achieves the required average for graduation, and the highest grade for the courses he passed is calculated and added to his academic record.

Article (29): Dropping Out of Studies, Cancelling Enrollment and Dismissal

- The student may request the postponement of his/her studies for a period not exceeding four semesters, separate or consecutive, during the period of his/her studies at the college, provided that the postponement requests are submitted no later than the end of the fifth week of the semester, and the postponement shall be effective after taking the opinion of the academic advisor, the Education and Student Affairs Committee, and the approval of the College Council and the University Council.
- If the student interrupts his studies at the college for a period not exceeding two semesters for compelling reasons approved by the Education and Student Affairs Committee and the College Council, the student will have another opportunity to register and resume his studies in the second semester, and the duration of the

interruption will be counted among the postponement opportunities available to the student.

- If the student passes at least 100 credit hours (i.e. in the fourth level), he/she has the right to continue studying to complete the graduation requirements and a maximum of 5 academic years, subject to expenses determined by the College Council.

Article (30): Listening System and Visiting Student

- The Faculty Council, after taking the opinion of the councils of the competent scientific departments, may accept students from the colleges of the university or other universities as listeners of some courses in the College in accordance with rules determined by the College Council and approved by the University Council.
- Visiting students from other colleges may also be admitted for a period of one year to study courses with a maximum of 36 credit hours, and students of the college may visit another university to study courses included in their study program after a maximum of 36 credit hours, and the courses studied by them are recorded in their academic record with the grades, grades, and points obtained.

Article (31): Application of the provisions of the Law on the Organization of Universities

- This regulation shall apply as of the academic year following the date of its issuance to new students at the first level of the college, while the remaining students for repetition at the first level and students transferred to higher levels shall be subject to the provisions of the internal regulations under which they enrolled until their graduation.
- The provisions of the Law on the Organization of Universities and its Executive Regulations shall apply in the absence of any provision in this Regulation.
- Admission to other programs in the previous regulations of the college that are not included in this regulation shall be canceled as of the date of issuance of the same decision.

Article (32): Application of Reference Rates for Quality and Accreditation

The College is committed to the necessity of conforming the scientific content of its programs to the quality standards in university education as defined by the National Authority for Quality Assurance and Accreditation of Education, especially the number of faculty members on the job at the college or university, and the suitability of their scientific specialization with teaching the courses they will participate in teaching based on the courses attached to the study regulations and their scientific content, as well as providing sufficient laboratory capabilities for students to acquire the skills and knowledge targeted for obtaining a bachelor's degree in science.

Article (33): Description of Programs and Courses

Each department of the college prepares a complete description of the contents of the program and the courses it teaches in the light of the proposals of the programs and courses developed by specialized scientific committees and approved by the Agricultural Sciences Sector Committee and approved by the Supreme Council of Universities. Courses after taking the opinion of the Agricultural Sciences Sector Committee.

Chapter Three

Program Course Schedules

Table 1 - Optional Requirements (University Requirement) for Program Students

Course Code	Course Name	Number of hours per week		Number of Credit Hours
		Lecture	Practs	
00100	Human rights and corruption Control	2	--	2
00101	Innovation and Entrepreneurship	2	--	2
00102	Critical thinking	2	--	2

Table (2) Basic Courses for First Level Students
Quality and Safety of Food Manufacturing Program
First Semester

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
06101	Physical and Analytical Chemistry	2	2	3	--
01103	Mathematics	1	2	2	--
04105	Plant Morphology and Histology	2	2	3	--
06107	Agriculture Zoology	2	2	3	--
02109	Principles of Agricultural Economics	1	2	2	--
00111	Scientific English Language	2	--	2	obligatory University Requirement
--	Elective University requirement	2	--	2	University Elective Requirement
Total Credit Hours		12	10	17	

Table (3) Basic Courses for First Level Students
Quality and Safety of Food Manufacturing Program
Second Semester

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
06102	Organic Chemistry	2	2	3	--
04104	Plant Taxonomy	1	2	2	--
08106	Safe crops production	2	2	3	--
07108	Safe fruit production	2	2	3	--
02110	Marketing and product development	2	2	3	--
00112	Community Issues	1	2	2	obligatory University Requirement
--	Elective University requirement	2	-	2	University Elective Requirement
Total Credit Hours		12	12	18	

**Table (4) Basic Courses for Second Level Students
Quality and Safety of Food Manufacturing Program
First Semester**

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
03201	Principles of Biochemistry	2	2	3	--
06203	General Entomology	2	2	3	--
04205	Agricultural Microbiology	2	2	3	--
04207	Principles of genetics	2	2	2	--
04209	Principals of Plant Pathology	1	2	3	--
05211	Safe animal production	2	2	3	--
07213	Safe vegetables production	2	0	2	--
Total Credit Hours		13	12	19	

**Table (5) Basic Courses for Second Level Students
Quality and Safety of Food Manufacturing Program
Second Semester**

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
03202	Food and Dairy Safety	2	2	3	--
03204	Supply chain in food processing	2	2	3	--
03206	Principals of Food Industry	2	2	3	--
03208	Principals of Dairy Science	2	2	3	--
00210	Computer and its applications in Food Sciences	1	2	2	--
08212	Statistics and data processing	2	2	3	--
Total Credit Hours		11	12	17	

**Table (6) Basic Courses for Third Level Students
First Semester**

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
03301	Food and Dairy Preservation Technology	1	2	2	208 Principals of Dairy Science
03303	Principles of Food and Dairy Microbiology	1	2	2	202 Food and Dairy Safty
03305	Food and Dairy analysis	1	2	2	-
03307	Food and Dairy additives	2	--	2	-
--	Program Elective	1	2	3	-
--	Program Elective	1	2	3	-
--	Free Elective	1	2	2	
Total Credit Hours		8	12	16	-

Table (7) Elective Courses for Third Level Students

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
03309	Biotechnology applications in Food and Dairy	2	2	3	--
03311	Food and Dairy chemical and non-biological pollutants	2	2	3	--
03313	National and international standards and legislations	2	2	3	--

The student will study 6 credit hours of elective courses in Table (7) of the first semester.

Table (8) Elective Courses (Free Choice) for Third Level Students

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
03315	Economics of Food and Dairy Industries	1	2	2	--
06317	Warehouse-pests control	1	2	2	--

The student will study 2 credit hours of free elective courses in Table (8) of the first semester.

**Table (9) Basic Courses for Third Level Students
Second Semester**

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
03302	Health conditions in Food and Dairy factories	1	--	1	303 Principles of Food and Dairy Microbiology
03304	Production of oils and fatty milk products	1	2	2	-
03306	Starters and Fermented Milks	1	2	2	-
03308	Production of Cheese and its Analogous	1	2	2	
--	Program Elective	2	2	3	
--	Program Elective	2	2	3	
--	Free Elective	1	2	2	-
Total Credit Hours		9	12	15	-

Table (10) Elective Courses for Third Level Students

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
03310	Food and dairy chemistry	2	2	3	--
06312	Toxins and pesticide residues in Food and Dairy contaminants	2	2	3	--
03314	Water and waste treatment in food and dairy industry	2	2	3	--

The student will study 6 credit hours of elective courses in Table (10) in the second semester.

Table (11) Elective Courses (Free Choice) for Third Level Students

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
05316	Production of milk , meat and eggs	1	2	2	--
00318	applications of Artificial intelligence in food safety	1	2	2	--

The student will study 2 credit hours of free elective courses in Table (11) of the second semester.

**Table (12) Basic Courses for Fourth Level Students
First Semester**

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
03401	Technology of Food and Dairy Packaging	1	2	2	--
03403	Condensed Milk, Milk Powder	2	2	3	03208
03405	Cereal and bakery production	1	2	2	--
00407	Field agricultural training	--	6	3	--
--	Program Elective	2	2	3	--
--	Free Elective	1	2	2	--
00400	Research Project	--	6	3	--
Total Credit Hours		7	22	18	

Table (13) Elective Courses for Fourth Level Students

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
03409	Documentation in Food and Dairy factories	2	2	3	--
07411	Control the Quality and Safety of Aromatic Medicinal Plants	2	2	3	--
05413	Meat, Poultry and Fish Production	2	2	3	--

The student will study 3 credit hours of elective courses in Table (13) of the first semester.

Table (14) Elective Courses (Free Choice) for Fourth Level Students

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
01415	Food Processing Engineering	1	2	2	--
03417	Sugar, sweeteners and special products	1	2	2	--

The student will study 2 credit hours of free elective courses in Table (14) of the first semester.

**Table (15) Basic Courses for Fourth Level Students
Second Semester**

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
03402	Food and Dairy borne diseases	2	2	3	303 Principles of Food and Dairy Microbiology
03404	Modern Food and Dairy Quality Management:	2	-	2	-
03406	Functional foods and Nutraceuticals	1	2	2	-
03408	Food and Dairy Products Sensory Evaluation	1	2	2	
--	Program Elective	2	2	3	-
--	Program Elective	2	2	3	-
--	Free Elective	1	2	2	-
00400	Research Project	-	6	2	-
Total Credit Hours		11	18	19	-

Table (16) Elective Courses for Fourth Level Students

Course Code	Course Name	Number of hours per week		Number of Credit Hours	Prerequisite
		Lectures	Practs		
03410	Enzymes in Food and Dairy processing	2	2	3	--
03412	Occupational safety and health	2	2	3	--
02414	Agricultural electronic marketing	2	2	3	--

The student will study 6 credit hours of elective courses in Table (16) of the second semester.

Syllabus of the courses of Quality and Safety of Food Manufacturing programme

06101	Physical and Analytical Chemistry	2 Lectures	2 Practs	3 Credit Hours
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Structure of the atom and chemical bonds, spectral studies of the atom and the order of electron distribution in the atom, modern electronic theory - theories of oscillating covalent bond - matter and its divisions, composition and units of measurement - States of matter - division of quantitative analysis methods, ionic activity, chemical equilibrium and solubility yield - sedimentation reactions and complex formation - gravimetric analysis - redox reactions - chromatography and spectroscopy methods of elements and molecules

Arabic References:

Abdel Hamid Sherif, *Physical Chemistry*, Dar Al-Kutub Al-Ilmiyyah, Cairo, 2016.

Mohamed Amin Al-Shawarbi, *Classical and Mechanical Analytical Chemistry*, Dar Al-Fikr Al-Arabi, 2018.

English References

Atkins, P. & de Paula, J. *Atkins' Physical Chemistry*, Oxford University Press, 2022.

Harris, D. C. *Quantitative Chemical Analysis*, W. H. Freeman, 2019.

01103	Mathematics	2 Lectures	2 Practs	3 Credit Hours
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Categories - Matrices - Determinants - Solving Equations - Functions, Ends, Partial Derivatives and Derivatives, Calculus Applications, Indefinite Integrals, Finite Integrals, Integration Applications

Arabic References:

Fouad Zakaria, *Principles of General Mathematics*, Anglo-Egyptian Library, 2017.

English References

Anton, H. & Rorres, C. *Elementary Linear Algebra*, Wiley, 2020.

Stewart, J. *Calculus: Early Transcendentals*, Cengage, 2021.

04105	Plant Morphology and Histology	2 Lectures	2 Practs	3 Credit Hours
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Phenotype of floral plants, description of different plant organs, roots and stem and leaf mutations, types of buds and branches, general anatomy of basic plant organs, different types of cells and tissues, some environmental studies.

Arabic References:

Abdullah Hamed, *Plant Anatomy*, Cairo University, 2018.

English References

Esau, K. *Anatomy of Seed Plants*, Wiley, 2007.

Beck, C. B. *An Introduction to Plant Structure and Development*, Cambridge University Press, 2020.

06107	Agricultural Zoology	2 Lectures	2 Practs	3 Credit Hours
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Classification of the animal kingdom - Characteristics of protozoa - Examples of classes of protozoa - Sects of flatworms - Roundworms - Ringworms - Arthropods - Snails and shells -

Sponges and other invertebrates - Chords in terms of division, biology and some internal organs of the body - Types of animal tissues and cells and their divisions

Arabic References:

Ahmed Badawi, *Agricultural Zoology*, Egyptian Renaissance Library, 2015.

English References

Hickman, C. P. et al. *Integrated Principles of Zoology*, McGraw-Hill, 2022.

02109	Principles of Agricultural Economics	2 Lectures	2 Practs	3 Credit Hours
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Nature, development and characteristics of agriculture, agricultural economic rules, economic classification, systems of production, marketing, financing and cooperation, economic agricultural policy, Egyptian agricultural economics, problems of Egyptian agriculture, Egyptian agricultural development, and Arab agricultural economic integration

Arabic References:

Mohamed Abdel Aziz, *Agricultural Economics*, Anglo Library, 2019.

English References

Tomek, W. G., & Kaiser, H. M. *Agricultural Product Prices*, Cornell University Press, 2017.

Kay, R. D., Edwards, W., & Duffy, P. *Farm Management*, McGraw-Hill, 2016.

00111	Scientific English Language	2 Lectures	-- Practs	2 Credit Hours
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Study of specialized scientific terminology in the field of food safety, processing and quality.

Arabic References:

Khaled Abu Shadi, *English Language for Scientific Purposes*, Dar Al-Fikr Al-Arabi, 2020.

English References

Glendinning, E. H. & Holmström, B. *English in Medicine*, Cambridge University Press, 2018.

Day, R. A. & Sakaduski, N. J. *Scientific English A Guide for Scientists and Other Professionals*, Greenwood, 2011.

06102	Organic Chemistry	2 Lectures	2 Practs	3 Credit Hours
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Composition of organic molecules, mechanics of organic reactions, methods of nomenclature of organic compounds and their natural and general chemical properties - methods of preparation, physical and chemical properties of aliphatic compounds (alkanes, alkenes, alkenes, alkyl halides, aliphatic alcohols, ethers, aldehydes and ketones, carboxylic acids and their derivatives, nitrogen compounds), dyes and petrochemicals and general applications for the preparation of some aliphatic compounds

Arabic References:

Mustafa Kamal, *Organic Chemistry*, Anglo Library, 2018.

English References

Solomons, T. W. G., Fryhle, C. B., & Snyder, S. A. *Organic Chemistry*, Wiley, 2022.

04104	Plant Taxonomy	2 Lectures	2 Practs	3 Credit Hours
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Introduction, Classification of Plants and Similar Organisms, Prokaryotes, Eukaryotic Organisms, Algae, Lichen Plants, Tadrid Plants, Bare-Seeded, Seed-Covered, Inflorescences, Flower Structure, Flowering Plant Reproduction, Fruit Types, Fruit and Seed Propagation, Common Plant Families of Seed Covered Fungi.

Arabic References:

Ahmed Abdel Gawad, *Botanical Classification*, Dar Al-Nahda Al-Arabiya, 2016.

English References

Judd, W. S., et al. *Plant Systematics: A Phylogenetic Approach*, Sinauer Associates, 2016.

08106	Safe crops production	2 Lectures	2 Practs	3 Credit Hours
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Plant ecology and its impact on production Agricultural operations Crop care Field crop cultivation systems Horticultural crop cultivation systems Protected farming systems A brief overview of the most important field and horticultural crops Modern techniques in plant production Agricultural operations on agricultural land - Pre-planting service operations Cultivation methods Post-planting service operations Estimation of crop components Vegetable cultivation and preparation for planting Methods of propagation of vegetable crops Ornamental nursery and flowering herbs - The effect of light and heat on ornamental plants Plant growth vessels Establishing nurseries for the production of different fruit seedlings Methods of propagation of different fruit plants.

Arabic References:

Ahmed Sobhy (2017). Field crop production. Al-Marrekh Publishing House.

Abdullah Jaber (2016). Production of cereal and legume crops. Anglo-Egyptian Library.

English References

Martin, J. H., Waldren, R. P., & Stamp, D. L. (2016). Principles of Field Crop Production. Pearson.

Singh, B. D. (2015). Crop Production: Principles and Practices. Kalyani Publishers.

07108	Safe fruit production	2 Lectures	2 Practs	3 Credit Hours
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Environment and its impact on production and fruit quality Types and sections of fruit - Agricultural operations Tree care and safe control and fertilization methods - Horticultural crop cultivation systems Protected farming systems A brief overview of the most important modern techniques in fruit care and harvesting Agricultural operations on fruit trees - Pre-planting service operations Cultivation methods Post-planting service processes Estimation of crop components Methods of propagation of different fruit plants - Establishment of nurseries for the production of various fruit seedlings Classification and packaging of fruits - Transportation and handling of fruits and sorting stations Storage - The most important methods of quality control and safety during fruit production

Arabic References:

Hassan Abdel Moneim (2018). Fruit production. Anglo-Egyptian Library.

Mohamed Abdel Gawad (2016). Fruit cultivation and production. Dar Al-Fikr.

English References

Hartmann, H. T., Kester, D. E., Davies, F. T., & Geneve, R. L. (2010). Plant Propagation: Principles and Practices. Pearson.

Childers, N. F. (2011). Modern Fruit Science. Horticultural Publications.

02110	Marketing and product development	2 Lectures	2 Practs	3 Credit Hours
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Marketing Overview - Introduction to Food Marketing - Agricultural and Food Marketing Analysis - Agricultural Production and Marketing - Food Consumption and Marketing - Food Processing and Processing Costs and Food Industries Price Analysis and Food Marketing - Prices of Agricultural Products and Foodstuffs - Food Marketing Costs Government Pricing, Income and Marketing Food Marketing Legislation - Commodity Marketing Livestock and Meat Marketing Milk and Dairy Products Marketing - Poultry and Egg Marketing - Grain Marketing Fruit and Vegetable Marketing) Risk Management and Market Futures - Transportation and storage - Market information - Product development Planning, development and testing Marketing.Modern methods in marketing agricultural products - The relationship of marketing to costs and profits Advertising designs Modern software and methods of displaying and arranging data

Arabic References:

El-Sayed Abdel Razek (2016). Agricultural marketing and product development. Dar al-Fikr al-Arabi.

Mahmoud Hussein (2017). Management and marketing of agricultural products. Anglo Library.

English References

Kotler, P., & Armstrong, G. (2018). Principles of Marketing. Pearson.

Ulrich, K. T., & Eppinger, S. D. (2015). Product Design and Development. McGraw-Hill.

00112	Community Issues	2 Lectures	-- Practs	2 Credit Hours
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It deals with the issues facing the Egyptian society (it is a set of fixed issues such as the population problem media education, corruption, and human rights) and some other changing .issues that can be identified by the faculty council according to the new issues

English References

Monny L.A, Knox, D. and Schacht C(2019). Understanding Social Problem Cengage Learning.

03201	Principles of Biochemistry	2 Lectures	2 Practs	3 Credit Hours
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Cell structure, chemistry of major and secondary biocomponents (carbohydrates, proteins, fats, hormones, vitamins, nucleic acids and bioenergy, as well as metabolism (building and catabolizing) carbohydrates, proteins and fats.

Arabic References:

Al-Hamlawi, Abdulrahman Ahmed (1989). Practical Biochemistry, Second Edition, Dar Al-Qalam, Kuwait.

Karza, Ahmed (1990). Biochemistry. Arab Medical University, Benghazi, Libyan Jamahiriya.

English References

de Man, J.M. (1990). Principles of Food Chemistry 2nd Ed. The AVI Book, Van Nost-Rand Reinhold, New York, USA.

Davies D., Giovanelli J., Rees T. (1964). Plant Biochemistry. Oxford

3-L. Leninger. Biochemistry. Worth Publishers Inc., 1975.

06203	General Entomology	2 Lectures	2 Practs	3 Credit Hours
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Insects - Insect Spread Factors - Insect Body Wall - Moulting in Insects - Insect Head, Head Skeleton, Head Growths, Cutting Mouth Parts and Mutations - Thoracic Polyps - Abdominal Rings and Their Genital Growths in Females and Males, Reproductive Growths and Their Mutations - Internal Body Systems in terms of Form and Structure including Gastrointestinal System, Excretory System, Reproductive System, Circulatory System, Respiratory System, Nervous System.

Arabic References:

Mustafa Abdallah (2016). General Entomology. Anglo-Egyptian Library.

Mohamed Hussein (2015). Insects and their agricultural importance. Dar al-Fikr al-Arabi.

English References

Triplehorn, C. A., & Johnson, N. F. (2005). Borror and DeLong's Introduction to the Study of Insects. Brooks Cole.

Gullan, P. J., & Cranston, P. S. (2014). The Insects: An Outline of Entomology. Wiley-Blackwell.

03205	Agricultural Microbiology	2 Lectures	2 Practs	3 Credit Hours
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Microorganisms (Brief History) - Segmentation Mode (Bacteria - Fungi - Structure and Function Nutrition, Growth and Reproduction in Microorganisms Bioactivity of Microbes in Different Environments and the Importance, Applications and Uses of Microorganisms in Agriculture and Biotechnology.

Arabic References:

Sami Abdel Hamid (2017). Agricultural Microbiology. Anglo Library.

Mohamed Abdel Aal (2018). Agricultural microorganisms. Dar al-Fikr al-Arabi.

English References

Atlas, R. M., & Bartha, R. (2013). Microbial Ecology: Fundamentals and Applications. Benjamin Cummings.

Subba Rao, N. S. (2018). Soil Microbiology. MedTech.

04207	Principles of genetics	2 Lectures	2 Practs	3 Credit Hours
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Mendelian Genetics - Interaction between Genes and Superiority - Traits and their Relationship to Sex - Genetic Linkage and Transit - Multiple Allele Systems - Sex Determination - Population Inheritance - Quantitative Genetics - Cytoplasmic Genetics

Arabic References:

Ahmed Kamal (2016). Genetics. Anglo-Egyptian Library.

Abdulhamid Ali (2017). Fundamentals of Genetics. Dar Al-Fikr.

English References

Griffiths, A. J. F., Wessler, S. R., Carroll, S. B., & Doebley, J. (2015). Introduction to Genetic Analysis. Freeman.

Snustad, D. P., & Simmons, M. J. (2015). Principles of Genetics. Wiley.

04209	Principals of Plant Pathology	2 Lectures	2 Practs	3 Credit Hours
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Terminology used in the study of plant pathology, the economic importance of plant diseases, how pathogens attack their plant hosts, the effect of pathogens on biological processes in plants, how plants protect themselves from infection, the effect of the environment on the manifestation of disease, general methods of resistance to plant diseases, the study of some plant diseases caused by fungi, bacteria, viruses and mycolasma-like organisms, as well as diseases caused by parasitic flowering plants, nematodes and those arising from inappropriate environmental conditions.

Arabic References:

Hassan Ibrahim (2016). Plant diseases. Al-Marrekh Publishing House.

Abdulaziz Ali (2018). Fundamentals of plant diseases. Anglo-Egyptian Library.

English References

Agrios, G. N. (2005). Plant Pathology. Academic Press.

Strange, R. N. (2016). Introduction to Plant Pathology. Wiley.

05211	Safe animal production	2 Lectures	2 Practs	3 Credit Hours
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Theories of livestock, their breeds and their relations with meat, dairy and leather production processes - Sheep and their breeds and their relations with the production of meat, dairy, wool, hair and leather - Study of the chemical composition of animal food - Natural plant forage and its effect on animal health and the quality of its products - Safe health environment and its requirements and impact on animals and the quality of its products - Estimation of the nutritional value of feed materials - Nutrition of milk, meat and sheep animals - Digestive system and physiology of digestion and absorption - Main feed materials - Unsafe substances that may be included in Forage composition Materials of animal origin - Genetically engineered grains and plants - Hormones and additives above normal levels - Reproduction - Fertility and infertility in farm animals - Artificial insemination - Physiology of milk production in ruminants - Education and genetics - Requirements for safe animal production in the reproductive stages - Education and care

Arabic References:

Mahmoud Abdel Latif (2017). Animal Production and Animal Nutrition. Anglo Library.

Mohamed Hassan (2016). Safe animal production. Dar Al-Fikr.

English References

McDonald, P., Edwards, R. A., Greenhalgh, J. F. D., & Morgan, C. A. (2010). Animal Nutrition. Pearson.

Pond, W. G., Church, D. C., Pond, K. R., & Schoknecht, P. A. (2004). Basic Animal Nutrition and Feeding. Wiley.

07213	Safe vegetables production	2 Lectures	2 Practs	3 Credit Hours
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Introduction to Safe Cultivation - Types of Vegetables - Classification of Vegetables A set of practices with reference to the plant name, family, origin, distribution, growing environment (soil or without soil), varieties, seeding, feeding and irrigation system, service and harvesting processes, production and plant protection including physiological disorders for fruit

vegetables - tomatoes, chili peppers and okra. Cucumber vegetables, pumpkin ridge, pumpkin bottled pumpkin, bitter gourd, watermelon, cabbage crop, cauliflower and crop bulbs - onion and garlic. Beans & Peas - French Beans Cluster Beans, Soybean Peas & Cowpea Tuber Crops - Sweet Potato Potatoes, Crop for Rhizome - Carrot Radishes, Turnips & Beet Root Leafy Greens. Applications of identifying important vegetable crops in production, trading, storage and safe preservation Breeding vegetable nurseries for vegetable crops - Planting vegetable seedlings in soil or soilless environments - Visiting commercial vegetable farms - Classifying and packaging vegetables are the most important methods of quality control and safety during vegetable production.

Arabic References:

Abdel Hamid Hussein (2018). Vegetable production. Anglo-Egyptian Library.

Mohamed Abdullah (2016). Cultivation of vegetable crops. Dar Al-Fikr Al-Arabi.

English References

Bose, T. K., Kabir, J., Maity, T. K., Parthasarathy, V. A., & Som, M. G. (2002). Vegetable Crops. Naya Udyog.

Wien, H. C. (1997). The Physiology of Vegetable Crops. CAB International.

03202	Food and Dairy Safty	2 Lectures	2 Practs	3 Credit Hours
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Clothing and personal hygiene – Chemical, physical and microbial sources of contamination of plant and animal foods, dairy and dairy products – Food and dairy safety tests. Quality control tools. Quality Control Drawings or Diagrams - Quality Factors in Dairy - Nutrition Labels - Specifications - Rules and Regulations - Hygiene Needs in Food and Dairy Factories - Cleaning and Cleaners - Water Supply - Good Manufacturing Practices. Contamination of milk with mycotoxins, microbial toxins, radiation pollution, pesticide residues, hormones, heavy metals, or chemicals added to coffee- The student studies the biological impact of these substances and how to measure and avoid contamination with them in order to preserve the health of the consumer from these dangerous substances to the health of humans, animals and living organisms.

Arabic References:

Prof. Dr. Lotfi Fahmy Hamzawy (2006) Modern Quality Systems in the Field of Food Processing (Second Edition) Dar Al-Kutub Al-Ilmiyyah for Publishing and Distribution - Cairo - GLOBE

Prof. Dr. Lotfi Fahmy Hamzawy (2006) Food Safety and Risk Analysis (Third Edition) Dar Al-Kutub Al-Ilmiyya for Publishing and Distribution - Cairo, P.A.P.

Nasim & Maher Georgy (2007) Water Quality Analysis and Evaluation, Ma'aref Facility, Alexandria, Egypt.

Youssef & Mohamed Kamal El-Sayed (2003) Determinants of Food Quality. Modern Knowledge Library, Alexandria.

English References

Erly, R. (1995). Guide to Quality Management Systems for the Food Industry.

Hubbard, M. R. (1990). Statistical Quality Control for the Food Industry.

Meilgaard et al. (1999). Sensory Evaluation Techniques. 3rd Ed.

Adams, M. and Moss, M. (2005). food Microbiology 2nd Ed. New Age International (p) Limited pub. New Delhi, India.

Norman G. Marriott, (1997). Essential of Food Sanitation International. Thomson Publishing.

03204	Supply chain in food processing	2 Lectures	2 Practs	3 Credit Hours
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Introduction to Supply Chains in Food Processing – Logistics – The Relationship between Pre-Harvest and Harvest Transactions with Transportation and Handling Operations – Foundations and Rules of Import and Export – Stages of Supply and Supply – Stores and Storage and Their Requirements, Inventory Management Processes and the Nature of Each Product – Producers – Traders – Consumers – Governing Laws – The Relationship of Supply Chains to Quality, Costs and the Price of the Final Product Applications: Structuring and planning of supply and supply operations – Data and management – Market monitoring and forecasting of variables affecting supply chains – Quality tests related to supply chains – Case study.

Arabic References

Abdel Sattar, Mohamed Abdel Ghani. (2014). Supply Chain Management. Dar Al-Fikr University.

Mustafa, Hassan. (2018). Supply Chain Management. Safaa Publishing and Distribution.

El-Desouki, Mahmoud Abdel Aziz. (2016). Operations and Supply Chain Management. Anglo-Egyptian Library.

English References

Pullman, M., & Wu, Z. (2012). Food Supply Chain Management: Economic, Social and Environmental Perspectives. Routledge.

Dani, S. (2015). Food Supply Chain Management and Logistics: From Farm to Fork. Kogan Page.

Chopra, S., & Meindl, P. (2019). Supply Chain Management: Strategy, Planning, and Operation (7th ed.). Pearson.

Berk, Z. (2018). Food Process Engineering and Technology (3rd ed.). Academic Press

03206	Principals of Food Industry	2 Lectures	2 Practs	3 Credit Hours
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Introduction – The State of Food in Egypt – The Main Components of Food: Organosensory Properties of Food – Food Spoilage – Food Poisoning and Food Infection – Food Packaging – Primary Food Processing – The Scientific Basis for Food Preservation in Different Ways.

Arabic References:

Al-Hakim, Sadiq Hassan, Hassan Abd Ali Mahdi (1985). Food Processing, University of Baghdad.

Jassim & Hamed Abdullah (1978). Food Industry: Foundations and Methods of Food Preservation (Part Two), University of Baghdad.

Nickerson, John T.R., Rutsevali, & Lewis J.R. (1990). Foundations of Food Science. Translated by Wasel Mohamed Abou Ela, Sobhi Salem Bassiouni. Arab House for Publishing and Distribution, Cairo.

English References

Vaclavik, V. A. (1998). Essentials of Food Science. Chapman and Hall. New York.

Potter, N. and J. Hotchkiss (1995). Food science 5th (Ed.). Chapman & Hall, New York, Ny, USA

03208	Principals of Dairy Science	2 Lectures	2 Practs	3 Credit Hours
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Basics of milk secretion, chemical composition of milk, chemistry of milk proteins and fats, microflora of milk and milk products, relationship of microbes to the manufacture of milk and milk products, fermented cheese and dairy technology, milk ice cream technology and fatty products and dried condensed milk.

English References

R.K.(1994). Modern Dairy Technology. Chapman and Hall,U.K.

Robinson, R.K.(1986). Modern Dairy Technology, Vol.2, Advances in Milk Products. Elsevier Applied Science Publisher, London

00210	Computer and its applications in Food Sciences	2 Lectures	2 Practs	3 Credit Hours
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Introduction to Information Technology. Basic Data Analysis Programs (MS Excel, SPSS). Database Applications in Food Industries, Design and Engineering Programs in Food Factories, Artificial Intelligence Applications and Modern Software in Quality Control. Areas of Computer Use - Computer Components and Parts - Basic Operating System Concepts and Windows Presentation as an Example - Binary System of Numbers - Data Representation on Computer - Computer Use in Mathematical Programs and Word Processing - Computer Use in Table Processing 365 Excel (Computer Use in Preparing and Using Database Presentations) - Using Internet Resources. Drivers (Windows10) (Start Dealing with Computer Turn on Computer Shut Down Computer View Basic Computer System Information Desktop Environment File Organization Text Editing Print Management Word Processing Program (365) Word (Introduction Initial Steps to Use Word Processing Software Insert Data Identification Data Search and Replace Command Format Final Format of Document Printing Tables Using Images in Word Create a New Document and Save It Save an Existing Document in Various File Format PowerPoint Presentations356 (Introduction Open a Presentation Application Open an Existing Presentation - Make Some Adjustments and Save It Adjust Basic Settings Save an Existing Presentation in a Format.

Arabic References:

Sami Mahmoud (2018). *Computers and its agricultural applications*. Anglo Library.

Emad El-Din Ahmed (2017). *Information Technology in Agricultural Sciences*. Dar Al-Fikr.

English References

Chapman, S. J. (2016). Fortran for Scientists and Engineers. McGraw-Hill.

Jay, J. M., Loessner, M. J., & Golden, D. A. (2005). Modern Food Microbiology. Springer.

08212	Statistics and data processing	2 Lectures	2 Practs	2 Credit Hours
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The importance of agricultural experiments in the present time - the scientific method of conducting agricultural experiments - Types of agricultural experiments - Sources of error when conducting experiments - Foundations of variance analysis - Statistical tests - Basic rules of design experiments - Single-sided and two-sided variance analysis - Types of experiment designs - Design and analysis of simple experiments - Completely random design - Design of complete randomized sectors - Latin square design). Applications to Measures of

Centrality Applications to Dispersion Measures Applications to Analysis of Variance Applications to Full Random Design Applications of Comparison of Averages Applications of Random Sector Design Applications to Latin Square Design Applications to Splitter Plots Applications to Simple Correlation Study of the Relationship between Variables Regression and Correlation Analysis.

Arabic References:

Abdulaziz Hassan (2015). Statistics and data analysis for agricultural researchers. Anglo-Egyptian Library.

Ahmed Abdel Hamid (2016). Biostatistics and its applications. Dar al-Fikr al-Arabi.

English References

Montgomery, D. C., & Runger, G. C. (2014). Applied Statistics and Probability for Engineers. Wiley.

Zar, J. H. (2010). Biostatistical Analysis. Pearson.

03301	Food and Dairy Preservation Technology	2 Lectures	2 Practs	3 Credit Hours
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Introduction to Food and Dairy Preservation (Historical), Its Origin, Need, Economics – The Most Important Methods of Food and Dairy Preservation Refrigeration, Freezing, Drying, Sugaring, Salting, Pickling, Concentration – Pasteurization – Sterilization – Superior Heat Treatment – Natural and Artificial Preservatives – Antibodies Microbes – Antioxidants – Vitamins and their relationship to food preservation – Packaging and introduction to packaging – Preservation affects the chemical components of the final product and physical and biological properties – Modern methods in food preservation – The use of microorganisms and their products in food preservation.

Arabic References:

Abu Bakr, Tayseer Mahmoud (2003). Refrigeration and Freezing of Food, Modern Knowledge Library, Alexandria, Egypt.

Al-Hakim, Sadiq Hassan, Hassan Abd Ali Mahdi (1985). Food Processing, University of Baghdad.

Jassim & Hamed Abdullah (1978). Food Industry: Foundations and Methods of Food Preservation (Part Two), University of Baghdad.

Jafar & Mohammad Hassan (2001). Food Preservation by Drying, Modern Knowledge Library, Alexandria, Egypt.

Hammad & Ali Ahmed Ibrahim (2003). Food Preservation by Irradiation, Modern Knowledge Library, Alexandria, Egypt.

Moussa, Mohamed Medhat, Al-Sahn & Malak Ahmed (2003). Food Concentration, Modern Knowledge Library, Alexandria, Egypt.

English References

Vaclavik, V. A. (1998). Essentials of Food Science. Chapman and Hall. New York.

Potter, N. N. (1996). Food Science. The Avi Publishing Co. Inc. Westport, Con.

Warren, L.; H, Albert and A, Gayle (2001). Examination of canned food. In: Bacteriological Analytical Manual online (chapter 21 A). U.S. food & Drug Administration Center for Safety & Applied Nutrition.

tumbo, C.R. 1973 Thermobacteriology in food Processing. Academic Press, London, UK.

03303	Principles of Food and Dairy Microbiology	2 Lectures	2 Practs	3 Credit Hours
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Introduction includes the history of microbiology of food and dairy. Microbial growth curve, natural and chemical factors affecting the killing and destruction of microbes. The types of microbes associated with food and dairy and their products such as fungi, yeasts and bacteria. Microbes found naturally in food and dairy and how to control them. Internal and external factors affecting microbial growth in foods and dairy. Microbial contamination of foods such as vegetables, cereals, pulses, oilseeds, dairy, cheese, fatty products, meat and their products during handling and processing. Chemical changes caused by microbial activity. Food poisoning and microbial toxins. Mycotoxins in food. Dairy is evidence of microbial food safety and quality. Fundamentals of quality control and microbial measurements. Diseases caused by milk microbes.

Arabic References:

- Abu Al-Dhahab, Mustafa Kamal (1965). Bacteria, Dar Al-Ma'arif, Egypt.
 Al-Muhaiza, Ibrahim Saad (2004) Food Microbiology. Scientific Publishing and Printing Presses, King Saud University, Riyadh.
 Al-Banna, Amr Abdel Rahman (2001). Microbiology and Food Spoilage, Modern Knowledge Library, Alexandria, Egypt.
 By Jaber Zayed, Adel Mahmoud Hammad (2002). Fundamentals of Industrial Microbiology, Arab House for Publishing and Distribution, Egypt.
 Abdo El-Sayed Shehata, Mohamed Nabil Al-Majdoub 2000 – Microbiology of Milk and its Products, Faculty of Agriculture, Ain Shams University, Cairo.

English References

- Adams, M. and Moss, M. (2005). food Microbiology 2nd Ed. New Age International (p) Limited pub. New Delhi, India.
 Banwart, G. (1991). Basic Food Microbiology 3rd Ed. ANTI Pub. Co. Westport, Conn. USA.
 Adam, M.R. and M.O. Moss, 1995. Food Microbiology. The Royal Society of Chemistry
 Robinson, R.K. (1990). Dairy Microbiology. Vol.1, the Microbiology of Milk. 2nd edn. Elsevier Applied Science Pub. Co, London.
 Richard, G.H. (1985). Standard Methods for Examination of Dairy Products. Pub. American Public Health Association. Washington, D.C. Chemistry and Testing of Dairy Products.
 Greenwood, M. 2003. Practical Food Microbiology Blackwell Pub, Massachusetts, USA.

03305	Food and Dairy analysis	2 Lectures	2 Practs	3 Credit Hours
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Introduction to the science of food and dairy analysis - Basic requirements for the health and safety of sampling and conducting analyses - Sampling methods and their relationship to various tests - Study of the basic methods and techniques necessary for qualitative and chemical physical analyses in addition to sensory examinations of food and dairy products and microbial evaluation of food and dairy products and its component, and the behavior of the ingredients of most foods in stores, manufacturing and cooking, and the relationship with the standards, regulations and governing legislations.

Arabic References:

- Ibrahim, Atef Mohammed, Hajjaj, Mohammad Nazif, Mustafa, Ibrahim Darwish (2002). Practical Methods for Estimating Chemical Components in Plant Tissues, Ma'aref Facility, Alexandria, Egypt.

- Aman, Mohamed, Youssef & Mohamed Mahmoud (1996). Chemistry and Food Analysis, Modern Publications House, Alexandria, Egypt.
- Aman, Mohamed, Youssef & Mohamed Mahmoud (2000). Food Composition and Analysis, Modern Knowledge Library, Alexandria, Egypt.
- Hassan, Mohamed Ibrahim, Atef Anwar Abu Arab (2002). Food Analysis, Dar Al-Fajr for Publishing and Distribution, Cairo.
- Abdullah, Mohamed Amin, Mamdouh Helmy Al-Qaliubi, Mohamed Magdy Khalaf (2002). Chemistry of Food Analysis: Scientific Foundations and Applications, Dar Al-Sharq, Cairo, Egypt.
- Hashem, Hanafi, Ahmed Askar (translation) (1996). Fundamentals of Food Chemistry. Arab House for Publishing and Distribution. Arab Republic of Egypt.

English References

- Francisco D., Octavio P.(2002). Natural Colorants for Food and Nutraceutical Uses. CRC press, London.
- Nielsen, S. S. (2002). Food Analysis. An Aspea Publication.
- Nielsen, S. S.(2003). Food Analysis Laboratory Manual. Kluwar Academic/ Pienum Publishers.
- Pieter W. (2003). Physical Chemistry of Foods, , Marcel Dekker, Inc., New York, USA.

03307	Food and Dairy additives	2 Lectures	2 Practs	3 Credit Hours
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The purpose of the application of additives in food and dairy, the regulatory status, generally recognized as safe (GRAS), their mode of action, their stability and interaction with food and dairy ingredients, their representation and carcinogenic effect, the permissible jars, techniques for their application in food and dairy products, benefits and risks, the safe use of food additives in dairy, anaphylaxis to additives. Food, consumers' attitude towards food additives. Types of food additives: antimicrobial agents, nutrient additives, vitamins and minerals, antibiotics, colors, flavorings, flavor enhancers, sugar, fat substitutes and sweeteners, acids and bases, moisture inhibitors, texture impurities and stabilizers, caking inhibitors, emulsifiers, polishing agents, recommended analysis techniques for various food additives in food.

Arabic References

- Abdullah, Sami. (2017). Food Additives: Properties and Uses. Dar Al-Fikr University.
- El-Shazly, Hala. (2018). The Role of Additives in Improving Dairy Quality. Academic Publishing House.
- Al-Sayed, Mahmoud. (2015). Food Additives: Between Benefits and Risks. Anglo-Egyptian Library.

English References

- Damodaran, S., Parkin, K. L., & Fennema, O. R. (2007). Fennema's Food Chemistry (4th ed.). CRC Press.
- Lund, B. M., & Baird-Parker, T. C. (2012). The Microbiological Safety and Quality of Food (Vol. 2). Springer.
- Kinsella, J. E., & Whitehead, D. M. (2012). Food Additives: Chemistry, Function, and Applications. Wiley-Blackwell.
- Jongen, W. M. F. (2005). Innovation in Agri-food Systems: The Case of Dairy Products.

Springer.

03309	Biotechnology applications in Food and Dairy	2 Lectures	2 Practs	3 Credit Hours
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Introduction – Biotechnology and its Fundamentals – The Relationship of Biotechnology to Food and Dairy – Biotechnology Applications in Food and Dairy – Modern Definition of Industrial Fermentation Technology and Resulting Fermented Dairy Products – The Most Important Microbial Cultures Recently Used on a Commercial Scale in the Fermentation Industries The most important conditions that must be met in the microbial strains used in the commercial production of fermented products - The most important procedures to be taken into account to maintain the activity of the microbial culture used and the tests used to ensure its purity and effectiveness - The most important raw materials that can be used as a fermentation medium and the most important conditions that must be met - The most important conditions that must be met in the fermenters used in production on a commercial scale to suit the purpose of their use. The most important techniques used in the fermentation process on a commercial scale, whether continuous or intermittent, are the correct scientific methods for separating fermentation products from the fermentation environment. Production of active substances, production of alcohol, production of citrate, production of organic acids, production of natural flavors and colorants, production of active yeast, production of microbial protein.

Arabic References

Mohammad, Adel. (2017). Biotechnology in the Food Industry: Applications and Innovations. Dar Al-Fikr University.

Sami, Adel. (2015). Biotechnology for Food and Dairy: From Theory to Practice. Dar Al-Ma'rifa.

Abdullah, Saeed. (2018). Biotechnology in Dairy and Food Production: Foundations and Practices. Academic Publishing House.

Hassan, Mustafa. (2016). Biotechnology in Food: Recent Applications and Research. Anglo-Egyptian Library.

English References

Jay, J. M. (2009). Modern Food Microbiology (7th ed.). Springer.

Gänzle, M. G., & Fritsche, S. (2015). Biotechnology of Lactic Acid Bacteria in Dairy Fermentation. Springer.

Stanton, C., Ross, R. P., & Hill, C. (2005). Fermented Foods and Beverages: Biotechnology Applications in Food. CRC Press.

Stevenson, D. E., & Tannenbaum, M. D. (2014). Biotechnology in Food Processing: Fermentation, Enzyme and Genetic Engineering Applications. Wiley-Blackwell.

Gibson, G. R., & Roberfroid, M. B. (2012). Prebiotics and Probiotics in Human Nutrition and Health. CRC Press.

03311	Food & Dairy chemical and non-biological pollutants	2 Lectures	2 Practs	3 Credit Hours
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Introduction to non-biotic food and dairy contaminants in both food and dairy products Heavy elements and salts – Industrial fumes and fuels – Pesticides, fertilizers, hormones and their residues – Radiations – adhesives, printing and inks – Methods of detecting and

estimating chemical and radioactive contaminants – Methods of avoiding and treating pollution and safely disposing of its causes in the work environment.

Arabic References

- Abdullah, Sami. (2016). Chemical Information for Food and Dairy: Foundations and Applications. University Press.
- El-Shazly, Hala. (2017). Chemical reactions in food and dairy. Dar Al-Ma'arif.
- Ali, Mustafa. (2015). Biochemistry of Food and Dairy: Analysis and Monitoring. Anglo-Egyptian Library.
- Hassan, Fawzi. (2018). Applied Chemistry in the Dairy and Food Industry. Dar Al-Fikr Al-Arabi.

English References

- Fennema, O. R. (2008). Food Chemistry (4th ed.). CRC Press.
- Karel, M., & Damodaran, S. (2012). Food Chemistry and Technology. Springer.
- Belitz, H.-D., Grosch, W., & Schieberle, P. (2009). Food Chemistry (4th ed.). Springer.
- Juliano, B. O. (1985). Rice Chemistry and Technology. American Association of Cereal Chemists.
- McClements, D. J. (2015). Food Emulsions: Principles, Practices, and Techniques (3rd ed.). CRC Press.

03313	National and international standards and legislations	2 Lectures	-- Practs	2 Credit Hours
A Brief History of Local Food Laws - Egyptian Food Safety Authority - Legislation Related to Food and Dairy Control in Egypt - Infrastructure for Integrated and Effective Control of Dairy and Food: Legislations - Analysis Services - Inspection Services - Inspections, Methods of Applying Food Laws and Legislations, Egyptian Standards - Management Services, Legislative and Executive Provisions for the Control of Dairy Products - White List of Companies and Producers - Food Additives - Pesticide Residues - Radioactive Pollution - Biological Toxins and Heavy Metals - Sound Hygiene Practices in the Production, Processing and Handling of Food and Dairy - Food Label: Its Content- How to prepare them, standard specifications for food label data- consumer rights and protection bodies. A Brief History of Food and International Laws, Federal Food Regulatory Agencies, Food Control Legislation in Europe, United States of America, Gulf, East Asia, Food Legislation Issued by the Food and Drug Organization (FAO), Food and Agriculture Organization of the United Nations and its Relations with Control and Legislation - World Food Legislation, Product Inspection Methods and Rules Governing Global Trade - Permissible Limits for Chemical, Biological, and Radioactive Contaminants and Foreign Substances on the Global Map - Export Specifications, Health and Ethical Requirements - Standard Specifications for Food Label Data - Islamic Food Laws and Legislations: Sources and Principles, Halal Food, and Illegal Food. Consumer Laws - Agreement on the Application of Health and Phytosanitary Standards, GATT, Codex Alimentarius.				

Arabic References:

- Rajab & Mohammad Hasib Hafez (2001). Legislation related to food control. Modern Knowledge Library, Alexandria.
- A set of laws, regulations and standards for food for the Arab Republic of Egypt, a group

of Arab countries, and international and regional organizations and bodies.

Samir Abdel Aziz Ghoneim, Mahmoud Mahmoud El-Sherbiny, (1990), Encyclopedia of Local and Imported Food Control Laws and Regulating Their Circulation, Dar Al-Jeel for Publishing and Distribution, Beirut.

Ministry of Health – Decisions of the Minister of Health on the Standard Specifications of Dairy and its Products until 2003.

English References

The Department of National Health and Welfare, Canada (1996), the Foods and Drugs Act and the Foods and Drugs Regulation, with amendments to May (1996), The Department of National Health and Welfare, Ottawa, Canada.

Stauffer, J.E. Quality Assurance and Dairy Processing (1993). Ch.1. In dairy science & technology handbook. Applications science, technology, and engineering. Edited by Y.H. Hui, Vcti, Publisher, Inc. PP.1-76.

Sanitjune (1990). Improved milk quality results in impressive pay-offs for industry. Dairy food environs . PP.359-361.

02315	Economics of Food and Dairy Industries	2 Lectures	2 Practs	2 Credit Hours
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Studying the specific economic rules for the production and consumption of processed food products, dairy and dairy products, ways to increase their production capacity and marketing economics, raising the production and economic efficiency of the resources used in the manufacture of food products, studying how to determine the optimal size and location of the factory, studying the determinants of the demand and supply of the raw material subject to manufacture, studying the problems faced by the dairy industry and its products.

English References

Mohamed Abdallah (2017). Economics of the Food Industry. Dar Al-Marrikh.

Ahmed Al-Sayed (2016). Dairy Economics. Anglo-Egyptian Library.

English References

Mehta, R., & George, R. (2005). Dairy Plant Management. CBS Publishers.

Connor, J. M., & Schiek, W. A. (1997). Food Processing: An Industrial Powerhouse in Transition. Wiley.

06317	Wearhouse-pests control	2 Lectures	2 Practs	2 Credit Hours
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Introducing the concept of pest management - rodents and insects with giving the student an overview of estimating the population of the clan, and the dynamics of the clan - measuring or estimating the loss in production - the levels of economic decisions of the clan - an overview of the analytical models and the theory of predator and victim - introducing the student to the problems of pesticide use - introducing the student to the role of biological control in integrated pest management. Phases of the management program – Control and pest management considerations – Key trends in the IPM program – Biological control assessment – Plant pathogen control management and intermodal coordination – Explanation of a model for integrated management under organic farming conditions and under protected farming

conditions. Concepts of storage pests; biology, environment, types of damage and behavior; assessment of post-harvest losses due to storage pests, environmental factors and storage pests in stores of perishable materials, grains and legumes, major groups of post-harvest pests (insects, mites, rodents) on commodities of economic importance in Egypt (cereals, pulses, oilseeds, vegetables, fruits, roots, tubers, ornamental plants, etc.) Economically important pest management practices after harvest.

Arabic References

- Al-Zahrani, Ahmed. (2016). Warehouse Pest Control: Foundations and Techniques. Dar Al-Maarifa University.
 Hassan, Abdullah. (2018). Warehouse Pest Management in the Food Industry. Dar Al-Ma'arif.
 Ali, Mustafa. (2017). Pest Control Techniques in Food Stores. Dar Al-Uloom.
 El-Shazly, Marwa. (2019). Pest Control in Food Stores: Methods and Innovations. Anglo-Egyptian Library.

English References

- Leach, A. R., & Aldridge, L. C. (2012). Pest Control in Food Storage and Warehousing. Wiley-Blackwell.
 Davis, R. M., & Johnson, W. G. (2014). Insect and Mite Pests in Food Storage. Springer.
 Scholz, F. (2006). Pests of Stored Products: Their Biology and Control. Springer.
 Baker, R. H. A. (2003). Integrated Pest Management in Food Storage. CRC Press.
 Kitching, R. L., & Pitt, D. M. (2011). Fumigation and Pest Control: Practices in Food Storage. Elsevier.

03302	Health conditions in Food and Dairy factories	2 Lectures	-- Practs	2 Credit Hours
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Introduction – Food and Dairy Industry and its Products – Safety – Quality – Public Health and Preservation – Health Requirements in Food and Dairy Factories – Legislation and Bodies Developed by Their Application, Control and Periodic Review and Their Impact on the Safety and Quality of the Product.

Arabic References:

- Al-Muhaiza, Ibrahim Saad, Al-Bhairi, and Mohamed Magdy. (1996). Food Health Affairs. Scientific Publishing and Printing Presses. King Saud University, Riyadh
 Rajab & Mohammad Hasib (2003). Non-Microbial Contamination and Spoilage of Food, Modern Knowledge Library, Alexandria, Egypt.

English References

- Norman G. Marriott, (1997). Essential of Food Sanitation International. Thomson Publishing.

03304	Production of oils and fatty milk products	2 Lectures	2 Practs	3 Credit Hours
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Sources of fats and oils - Physical and chemical properties of fats and oils - Processes related to extraction, manufacture, storage and distribution of edible fats and oils, hydrogenation - Production of protein separated from oilseeds and other products - Spoilage of fats and oils - Standard specifications and quality control of fats and fatty foods - Methods of separation of cream (ground gravity and centrifugal) - Types of cream - Butter (manufacturing methods) - Ghee (methods of manufacturing, preservation and processing) - Butter oil (Methods of manufacture and margarine -hydrogenated oils and defects of fatty products).

Arabic References:

Al-Shaykh, Fouad Abdulaziz Ahmed (1993). Manufacture of oils and fats. Egyptian Universities Publishing House, Cairo.

Abdel Nabi & Ali Ahmed Ali (2001). Oil and fat technology. Dar Al-Ma'arif Al-Hadith, Alexandria.

English References

Christie, W. W. (1982). Lipid Analysis. Pergamon Press ,Oxford.

Lawson, H. (1995). Food Oil and Fats. Technology, Utilization and Nutrition. Chapman & hall. London.

El-Kalyobi, M. and M., Mostafa (2005). Chemistry and Technology of Fats and Oils. Principles and Application. Osoris, Cairo, Egypt.

03306	Starters and Fermented Milks	2 Lectures	2 Practs	3 Credit Hours
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The primers used in the manufacture of dairy "their totals and most important characteristics" – the methods of preparing primers – the factors affecting the growth and activity of primers and the fermentation of lactose sugar – and their effect on other milk components – the relationship between primers – primers and their ability to preserve dairy products – the basis of fermented dairy industry and the role of Prefixes during Industry - Raw Materials Used in the Manufacture of Fermented Dairy Products - A Detailed Study of Some Fermented Dairy Products Using Some Medium Temperature Loving Prefixes

Arabic References:

Muhammad Al-Husseini Abd al-Salam . 1994. Fermented milk. Egyptian General Authority for Books. Cairo.

English References

Robinson, R.K. (1994). Encyclopedia of Fermented Fresh Milk Product, Culinary and Hospitality Industry Publications Services, London.

Rasic, J.L. & Kuramann, J.A. (1985). Yoghurt. Technical Dairy Publishing Horise, Jyllingeve 39 Copenhagen, Denmark.

03308	Production of Cheese and its Analogous	2 Lectures	2 Practs	3 Credit Hours
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Cheese of American origin, cheese of European origin, cheese of Latin American origin, cheese of African origin, cheese of Asian and Australian origin, semi-cheeses traded in the Egyptian market, microfiltration technique, methods in which acidification plays a fundamental role, methods of maintaining calcium levels, continuous tubular manufacturing methods, use of cold blowing, production of mozzarella cheese, production of similar cheese, Damietta cheese, production of similar cheese, production of similar cheese of refrigerator.

Arabic References:

Ezz El-Din Farraj (1983). Milk, milk, cheese, butter and cream. Egyptian Renaissance Library. Cairo.

Earth-Mayer (1973). Manufacture of cooked cheese. University Press – Mosul.

Abdo El-Sayed Shehata (1997). Cheese technology "scientific foundations". Academic Library – Cairo.

English References

Fox, P.F. (1993). Cheese chemistry, physics and microbiology “ Volum General Aspects”. Chapman and Hall, London, Glasgow, New York.

Fox, P.F. (1993). Cheese chemistry, physics and microbiology “ Volum2Major cheese Group”.

Chapman and Hall ,London , Glasgow, New York.

Scott,R.(1981). Cheese making practice Applied science publishers,LTD,London.

Robinson,R.K.(1995). A colour Guide og cheese and fermented milks.1st Chapman and Hall,London , Glasgow, New York

03310	Food and dairy chemistry	2 Lectures	2 Practs	3 Credit Hours
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Chemical composition of Egyptian cattle milk, chemistry of different milk components: lipids, proteins and nitrogen compounds, lactose, minerals, vitamins, and milk enzymes.- The chemical and physical properties of water and its relationship to food spoilage, the functional characteristics of proteins and their reactions with carbohydrates and fats and their effect on food, changes during the processing and storage of food, and the study of each of the other components that include dyes, flavors, minerals, vitamins and enzymes as well as additives, where the student learns about the chemical composition and chemical, biological, enzymatic and non-enzymatic reactions that occur in food and the impact of food processing processes on these reactions as well as the extent to which the Food ingredients.

English References

Walstra, P. and R.Jenness (1984) Dairy chemistry and Physics, John Wiley , new York, U.S.A.

Richard, G.H.(1985). Standard Methods for Examination of Dairy Products.Pub. American Public Health Association. Washington, D.C. Chemistry and Testing of Dairy Products.

Fox,P.F.&McSweeney,P.L.H.(1998). Dairy Chemistry and Biochemistry. Chapman Hall, London.

06312	Toxins and pesticide residues in Food and Dairy contaminants	2 Lectures	2 Practs	3 Credit Hours
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Introduction to Toxicology: Definition, Dose, Response, Absorption, Reformation, Storage, Excretion - Natural Sources of Toxins in Food, Dairy and Dairy Products - Plant, Animal, Chemical and Microbial Toxins inFood, Dairy and Dairy Products - Effect of Processing and Preparation of Food, Dairy and Dairy Products on Their Safety - Mechanics of Food Poisoning Different Methods of Toxicity Identification – Foodborne and Dairy Diseases – Bacterial and Mycotoxins in Food and Dairy and How to Avoid Them – Chemical Toxins – Heavy Metal Poisoning – Pesticide Poisoning and Their Residues – Food and Dairy Safety Monitoring SystemsGood Manufacturing Practices, Total Quality Management, Hazard Analysis System, Detoxification Mechanisms.Ingredients in processed frankincense: heat treated, irradiated, and genetically modified frankincense.

Arabic References

Al-Zahrani, Hassan. (2017). Food Toxins and Pesticide Residues: Risks and Prevention Methods. Dar Al-Fikr University.

Ali, Mohammad. (2015). Chemical Toxins in Food and Pesticide Residues. Dar Al-Ma'arif.

Hassan, Abdullah. (2019). Food Safety: Poisons and Pesticides in Dairy and Food. Dar Al-Uloom.

Al-Sayed, Mohammad. (2018). Food Quality Control: Poisons and Pesticides in Dairy. Dar Al-Safa.

English References

- Jukes, T. H. (2007). Food Toxicology: Current Advances in the Toxicology of Pesticides and Foodborne Toxins. CRC Press.
- Samarajeewa, U., & Jayasena, D. D. (2011). Pesticide Residues in Food: Methods for the Detection of Pesticide Residues in Food. Wiley-Blackwell.
- Yuan, Y., & Liu, Z. (2014). Toxicological Aspects of Pesticides and Their Residues in Foods and Agricultural Products. Springer.
- Harrison, J. R., & Miller, M. S. (2010). Food Safety and Pesticides: Risks and Regulation. Wiley.
- Toth, S., & Fiedler, R. (2016). Pesticide Residues in Food: Analytical Methods for the Detection and Determination of Pesticide Residues. Springer.

03314	Water and waste treatment in food and dairy industry	2 Lectures	2 Practs	3 Credit Hours
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Water Treatment and Waste of Food and Dairy Factories: Types, Sources and Characteristics of Food and Dairy Processing Waste. Biological, natural and chemical treatment of waste disposal, bioprocessing of processed food and dairy waste. Managing by-waste products. Obtaining materials from effluents by different systems. Utilizing the waste of the food and dairy industry.

Arabic References

- Al-Zahrani, Mohammad. (2017). Waste Management in the Food and Dairy Industry: Foundations and Applications. University Press.
- Saeed, Ahmed. (2015). Dairy and Food Waste Treatment: Effective Methods and Strategies. Dar Al-Fikr Al-Arabi.
- Ali, Hossam. (2016). Industrial Waste Management in the Food and Dairy Industries. Dar Al-Uloom.
- Abdullah, Youssef. (2018). Waste Treatment Techniques in the Dairy Industry. Dar Al-Ma'rifa.

English References

- Adler, R. A. (2008). Waste Management in Food and Dairy Industries: Technologies and Sustainability. Elsevier.
- Richardson, M., & Ristori, S. (2010). Wastewater and Waste Management in Dairy Industry: Techniques and Best Practices. Springer.
- Santos, M. A., & Worsfold, P. J. (2014). Waste Management in Dairy and Food Processing. Wiley-Blackwell.
- Mara, D. D., & Horan, N. J. (2013). Handbook of Water and Wastewater Microbiology. Academic Press.
- Pescod, M. B. (1992). Wastewater Treatment and Use in Agriculture. FAO Irrigation and Drainage Paper No. 47. Food and Agriculture Organization

05316	Production of milk, meat and eggs	2 Lectures	2 Practs	3 Credit Hours
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Foundations of Meat, Eggs and Fish Production - Sources of Meat Production - Sources of Dairy Production - Sources of Egg Production - Sources of Fish Production - Quality of Meat, Dairy, Poultry and Fish - Factors Affecting the Production of Meat, Milk, Poultry and Fish - Nutrition of Dairy Animals, Meat, Fish and Poultry - Marketing of Animal, Fish and Poultry Products

English References :

Abdel Hamid El-Sayed (2017). *Meat and dairy production*. Anglo-Egyptian Library.

Mahmoud Abdel Razek (2016). *Poultry and egg production*. Dar al-Fikr al-Arabi.

English References

North, M. O., & Bell, D. D. (1990). *Commercial Chicken Production Manual*. Springer.

Aberle, E. D., Forrest, J. C., Gerrard, D. E., & Mills, E. W. (2012). *Principles of Meat Science*. Kendall Hunt.

00318	Applications of Artificial Intelligence in Food Safety	2 Lectures	2 Practs	3 Credit Hours
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Basic Concepts of Artificial Intelligence and Machine Learning, Artificial Networks, Applications of Artificial Intelligence in Agriculture (Crop Forecasting, Smart Irrigation), Applications of Artificial Intelligence in Food Processing (Defect Detection, Quality Control), Agricultural Robots and Computer Vision Systems.

Arabic References:

Sami Abdel Fattah (2019). *Artificial Intelligence and its Agricultural Applications*. Dar al-Fikr al-Arabi.

Amr Mahmoud (2020). *Artificial Intelligence Technology*. Anglo-Egyptian Library.

English References

Russell, S., & Norvig, P. (2020). *Artificial Intelligence: A Modern Approach*. Pearson.

Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep Learning*. MIT Press.

03401	Technology of Food and Dairy Packaging	2 Lectures	2 Practs	3 Credit Hours
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Basics of Food and Dairy Packaging: Overview - Packaging Materials - Packaging Shapes - Packaging Problems - Packaging Material Tests and Quality Assessment, Selection Criteria - Packaging Process as Part of the Manufacturing Process - Some Models of Packaging Machines - Printing Technology, Recent Developments in Packaging Technology Food and Dairy The Relationship between Packaging and Marketing - Government Regulations Affecting Packaging - Disposal of Packaging Waste - Some Examples of Packaging of Some Food Items - The Impact of Packaging on the Quality and Safety of Food and Dairy - The Interaction of Packaging Materials with Milk and its Products - Smart Packaging Ingredients and Active Packaging Food packaging with antimicrobial materials - Modified gaseous atmosphere technology in packaging - Bar code system in packaging, environmental impact of recycling of packaging materials.

Arabic References:

Nabil Mohamed Muhanna - Walila Al-Sibai (2000) *Packaging and Packaging of Food and Dairy Products*. Knowledge Facility - Alexandria

Mohamed, Khalil Mohamed, Mohamed Hamadi Abdel Aal, Saad Mohamed Quteit, and Al-Sayed Mohamed Abu Tor (2004). *Fundamentals of food processing and preservation*.

Bustan Al-Maarifa Library, Kafr Al-Dawar, Egypt.

English References

Jackson, J. M. and Shinn, B. M. (1979). *fundamentals of food canning technology*. AVI Pub. Company, INC.

03403	Condensed Milk, Milk Powder	2 Lectures	2 Practs	3 Credit Hours
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Definition and Terminology – Common Manufacturing Steps between Dried and Condensed

Milk – Concentrated Milk Industry – Sweetened Condensed Milk Industry – Powdered Milk Industry – Natural Properties of Fast-Dissolving Powdered Milk – Reformulated Milk – Gradient and Quality Assurance – Defects Appearing in These Types of Milk – Different Preservation Methods.

Arabic References:

Leila Badawi Abdel Hamid, Abdel Moneim El-Badawi Hajras (1995) Condensed and Dried Dairy Technology, Faculty of Agriculture, Ain Shams University, Cairo.

English References

Gillies, M.T.(1974). Dehydration of natural and simulated Dairy products. Noyes data corporation, Landon, England.

Arbuckle, W.S.(1986). Ice Cream. Pub Van Nestred and Reinheld Company, N.Y. London.

03405	Cereal and bakery production	2 Lectures	2 Practs	3 Credit Hours
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The most important types of cereals and pulses produced, their varieties and uses - The structural and chemical composition of grains and its relationship to milling processes, extraction and production of starch - Flour and milling products - Methods of manufacturing grains to bakery products, fermentation, extrusion, processed and processed foods, breakfast cereals and pasta processing - Nutritional factors in flour and bread, and other processed products, the structural and chemical composition of legumes and their importance in the diet. Anti-nutritional agents in legumes, methods of removal, baby food technology.

Arabic References:

Abdel Aziz Ismail & Feryal (2001) Grain Technology, Modern Knowledge Library, Alexandria, Egypt.

Mahmoud Ramadan Mohamed (2001) Baking Technology, Modern Knowledge Library, Alexandria, Egypt.

Kent, L. N. and Evers, (1999) Grain Techniques. (Translated by Al-Mana, Hassan Abdel Aziz). Scientific Publishing and Printing Presses, King Saud University, Riyadh.

English References

Kent, N.L. and Evers A.D. (1994). Technology of Cereal. 4th Ed. Pergamon press, London.

Pomeranz, Y. (1987). Modern Cereal Science and Technology. VCH Publishers. Inc. New York.

00407	Field agricultural training	0 Lectures	6 Practs	3 Credit Hours
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Weekly visits to agricultural and food production areas within the governorates of Alexandria supervising food safety, students and Beheira, in addition to government agencies and bodies prepare reports on each visit and presentations .

03409	Documentation in Food and Dairy Factories	1 Lectures	2 Practs	2 Credit Hours
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Documentation processes in farms, production units and factories – Documentation as the basis of Good Manufacturing Practice or GMP Design, use and review of records – Modern manual, semi-automated and automated coding and tracking systems. Reporting and reviewing.

Arabic References

Al-Zahrani, Hassan. (2017). Documentation in Food and Dairy Factories: Foundations and

Techniques. Dar Al-Maarifa University.

Sami, Ahmed. (2016). Documentation Department in Food and Dairy Factories. Dar Al-Ma'arif.

Ali, Mustafa. (2018). Documentation and Quality Procedures in the Food and Dairy Industries. Dar Al-Safa.

Mahmoud, Mohammad. (2015). Documentation in the Dairy Industry: Foundations and Procedures. Dar Al-Uloom.

English References

Baker, R. H., & Thomason, A. L. (2009). Food Quality Assurance: Principles and Practices. Springer.

Haug, W. (2011). Food Safety and Quality Assurance: Documenting and Complying with Standards in Food Manufacturing. Wiley-Blackwell.

Keeney, P., & Michman, R. (2014). Food Production Safety and Documentation. CRC Press.

O'Neill, D., & Page, M. (2012). Quality Control in the Food Industry: Documentation and Records for Compliance. Elsevier.

Morris, M. (2008). Documentation and Record Keeping in Food Safety Management. John Wiley & Sons.

07411	Control the Quality and Safety of Aromatic Medicinal Plants	2 Lectures	2 Practs	3 Credit Hours
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Introduction – The importance of medicinal and aromatic plants – their division – Sources of medicinal plants – Components of their cultivation – Factors affecting production – Active substances present in them – Volatile oils and their extraction methods – Chemistry of volatile oils – Storage – Natural and chemical qualities – Identification of the components of volatile oils by modern methods - Factors affecting the production of medicinal and aromatic plants - Alkaloids - Glycosides - Resins and their derivatives - Saponins and gels - Bitter substances and tannins - Study of the cultivation of oral family plants, municipal mint and pepper - basil - sage – Marjoram – Melissa – Hasalban – Thyme...etc. - Plants of the compound family: pyeong, pyrethrum etc. - Plants of the tent family, whether in soil or cultivated without soil.

Arabic References

Abdullah, Saeed. (2016). Quality Control of Medicinal and Aromatic Plants: Foundations and Techniques. University Press.

Hassan, Mohammad. (2017). Safety and Quality of Medicinal and Aromatic Plants: Methods and Techniques. Dar Al-Ma'arif.

Ali, Fawzi. (2018). Medicinal and Aromatic Plants: Foundations and Applications in Quality Control. Dar Al-Olum.

El-Shazly, Marwa. (2015). Quality Control in Aromatic and Medicinal Plants: Methods and Strategies. Dar Al-Safa.

English References

Blumenthal, M. (2000). The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines. American Botanical Council.

Robbers, J. E., & Speedie, M. K. (2014). Pharmacognosy and Pharmacobiotechnology (2nd ed.). Springer.

Williamson, E. M., & Driver, S. (2014). Herbal Medicine: Biomolecular and Clinical Aspects. CRC Press.

Murray, M. T., & Pizzorno, J. E. (2012). Encyclopedia of Natural Medicine (3rd ed.). Atria Books.

Lange, D., & Linde, K. (2016). Herbal Medicines: An Evidence-Based Approach. CRC Press.

03413	Meat, Poultry and Fish Production	2 Lectures	2 Practs	3 Credit Hours
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Introduction to the production of meat, fish and poultry in Egypt and the world and the import and export movement – the sources of muscle foods, and its importance in the national economy, the chemical composition of red and white meat, the processing of animals and slaughtering methods, the changes that occur after the slaughter of the animal and how it affects the quality of the meat produced, the classification and cutting of meat and the nutritional value of meat from the different parts of the carcass – poultry: its types and specifications, methods of slaughter, handling and processing – The preference of refrigerated and frozen poultry structurally and rheumatically according to the consumer taste inside and outside Egypt - Fish production and processing and quality checks - Sources of muscle food and its importance in the national economy, the chemical composition of red and white meat Processing of animals and slaughter methods, the changes that occur after the slaughter of the animal and how it affects the quality of the meat produced, the classification and cutting of meat and the nutritional value of meat from the different parts of the carcass - red and white meat (Chicken and fish) Production, processing and quality checks – Processing of meat, poultry, eggs and fish into high quality food products – Spoilage and spoilage of meat, fish and their products – Composition, nutritional value and safety of meat, poultry, eggs and fish products – Utilization of by-products and manufacturing wastes.

Arabic References:

Al-Zalaqi, Esmat Muhammad Saber (2001). Meat Technology, Modern Knowledge Library, Alexandria, Egypt.

Partner, Youssef (1996). Meat and Waste Technology. Arab House for Publishing and Distribution, Cairo.

Al-Taie, Munir Abboud (1987). Meat and Fish Technology, Faculty of Agriculture, University of Basra.

Hassan, Ibrahim Mohamed (2001). Fish Technology, Modern Knowledge Library, Alexandria, Egypt.

Prof. Dr. Ibrahim Mohamed Hassan, Prof. Dr. Mohamed Faraj Khalaf, Dr. Amin Al-Jamal, Prof. Dr. Mohamed Fathi Othman – Fish Technology 2001

English References

Kisman, D., Kotula, A., Breidenstein, B.C.(1994). Muscle Foods.Chapman & Hall, Inc. New York.

Pearson, A.M and Tauber, F.M. (1984). Processed Meat. Van Nostrand Reinhold Company. New York

01415	Food Processing Engineering	2 Lectures	2 Practs	3 Credit Hours
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Introduction to Food Processing Engineering - Definitions, Dimensions and Engineering Units

- Material and Energy Balance - Fluid Flow - Fans and Pumps in Food Factories - Steam and Hot Water Production: Boilers - Saturated Steam - Dry - Roasted - Heat Transfer: Load and Conduction - Heat Exchangers: Their Types, Heating and Cooling Curves, Heat Treatment and Cleaning Devices, Characteristics of Humid Air and Psychometric Maps and Their Uses, Refrigeration, Convection Bases, Cooling and Freezing Capacities and Their Relationship to Products, Pressing and Forming, Control of Contaminants and Control of Their Diffusion, The relationship between the design of factories and production units and food safety.

English References

Hand book of Food Engineering Second edition 2006, CRC press by Dennis R. Hold man , Dark/ B.lund

03417	Sugar, sweeteners and special products	2 Lectures	2 Practs	3 Credit Hours
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Natural sources of sugar (sugar cane – beets). Sugar extraction techniques and natural and artificial sweeteners production techniques. Special products (sugar cane, molasses, corn syrup). Health and economic aspects of sweeteners.

Arabic References:

Ahmed Fouad (2017). Sugar technology and products. Al-Marrekh Publishing House.

Mostafa Abdel Hamid (2016). Sugar industry. Anglo-Egyptian Library.

English References

Eggleston, G., & Vercellotti, J. R. (2003). *Sweeteners and Sugar Alternatives in Food Technology*. Wiley-Blackwell.

Chen, J. C. P., & Chou, C. C. (1993). *Cane Sugar Handbook*. Wiley.

03402	Food and Dairy borne diseases	2 Lectures	2 Practs	3 Credit Hours
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Introduction to Epidemiology, Epidemiological Investigation, Critical Control Point Analysis (HACCP), Food and Dairy Microbial Risk Assessment of Hazards, Application of Food and Dairy Borne Disease Risk Assessment and Disease Conservation and Control Strategies. Animal pandemics and their transmission to humans – diseases transmitted by processed and manufactured products – biosafety of production lines.

Arabic References:

Al-Banna, Amr Abdel Rahman (2001). Bacterial and fungal food poisoning. Modern Knowledge Library, Alexandria.

Rajab & Mohammad Hasib Hafez (2003). Non-microbial contamination and spoilage of food. Modern Knowledge Library. Modern Knowledge Library, Alexandria.

English References

Betina, V. (1984). *Mycotoxins: Production, Isolation, separation and Purification*. Elsevier, Amsterdam

03404	Modern Food and Dairy Quality Management	2 Lectures	2 Practs	3 Credit Hours
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Providing the student with general information related to the terminology and basics of quality control and measurement, theoretical and applied concepts in the fields of quality control of food, dairy and its products, the relationship between the quality control department and other departments in the factory, and the factors affecting the quality of food and dairy in its various

stages of processing such as manufacturing, storage, transportation and handling, as well as the conformity of these foods and dairy with international and national standards and specifications. Quality measurement methods, sensory assessment in quality control, food and dairy connoisseurs – and the creation of quality control charts – quality control and dairy safety systems based on GAP, GHP, GMP, and HACCP systems.

Arabic References:

Egyptian General Organization for Standardization and Production Quality, Egyptian Standards for Dairy Products until 2002.

Samir Abdel Aziz Ghoneim, Mahmoud Mahmoud El-Sherbiny, (1990), Encyclopedia of Local and Imported Food Control Laws and Regulating Their Circulation, Dar Al-Jeel for Publishing and Distribution, Beirut.

Ministry of Health – Decisions of the Minister of Health on the Standard Specifications of Dairy and its Products until 2003.

English References

Stauffer, J.E. Quality Assurance and Dairy Processing (1993). Ch.1. In dairy science & technology handbook. Applications science, technology, and engineering. Edited by Y.H. Hui, Vcti, Publisher, Inc. PP.1-76.

Sanitjune (1990). Improved milk quality results in impressive pay-offs for industry. Dairy food environs . PP.359-361.

03406	Functional foods and Nutraceuticals	2 Lectures	2 Practs	3 Credit Hours
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Definition of functional foods, their divisions, types, economies and added value – functional dairy products – functional foods of plant origin – microbes producing active substances – functional foods for special purposes and with stimulant and therapeutic properties. Definition and Origin of Therapeutic Nutrients, Their Divisions and Structures – Therapeutic Nutrient Product and Conservation Technology – The Role of Microbes in the Production of Therapeutic Nutrients. Industrial Processes and Their Effects on Active Substances – Recent Trends in Food Processing Technology – Microencapsulation.

English References

Chadwick R. 2003. Functional Foods. Springer.

Desai BB. 2000. Handbook of Nutrition and Diet. Marcel Dekker.

Gibson G & William C. 2000. Functional Foods. CRC Press.

Goldberg I. (Ed.). 1994. Functional Foods. Chapman & Hall.

Haberstroh CE. 1991. Fat and Cholesterol Reduced Foods. Gulf Publ. Co.

Mazza G. 1998. Functional Foods. Biochemical and Processing Aspects. Technomic Publ.

03408	Food and Dairy Products Sensory Evaluation	2 Lectures	2 Practs	3 Credit Hours
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Basic information on sensory perception, factors affecting participants' evaluation, conducting sensory tests, testing methods and designs to be applied to evaluate the sensory properties of food, dairy and dairy products - Collecting and analyzing sensory data or data - Organizing and evaluating the sensory assessment program - Consumer field tests and questionnaire design. Statistical Procedures.

Arabic References

Aman, Mohamed, Youssef & Mohamed Mahmoud (2000). Food Composition and Analysis, Modern Knowledge Library, Alexandria, Egypt.

Youssef & Mohamed Kamal Al-Sayed (2003). Food Quality Determinants. Modern Knowledge Library, Alexandria.

English References

Meilgaard et al. (1999) Sensory Evaluation Techniques. 3rd Ed

00400	Research Project	0 Lectures	6 Practs	3 Credit Hours
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The student prepares an applied study, a proposed project, or an industrial design in the field of dairy safety, and this includes a miniature or realistic implementation with data collection feasibility of the project. Writing the scientific report on the project and analysis to show the and the ,accompanied by pictures, engineering drawings, and models as much as possible project is supervised by a faculty member in the project specialization, and the students are investigateThe stributed at the beginning of the semester. The student is required todi topic/problem, and the plan for the implementation of the research work, as well as discussing, ls, facing problems education skil-analyzing, and modeling it to provide the student with self logically, and proposing appropriate solutions. The project addresses a problem, solves it in an integrated way, and applies it to dairy processing and safety and in collaboration with le. The student will submit a report at industry, the government, or an NGO whenever possib the end of the final year. The course includes familiarity with the basic skills of scientific research and their applications through the preparation of scientific research by addressing a o one of the areas of specialization, then collecting and analyzing research problem related t data statistically, discussing the results in a scientific way, reaching the most important .recommendations, and presenting the research in a complete form

03410	Enzymes in Food and Dairy processing	2 Lectures	2 Practs	3 Credit Hours
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Enzymes, their types and their role in food and dairy – Enzymes – Enzymes – Enzyme chemistry – Enzyme inhibition – Use of enzymes of plant, animal and microbial origins in food and dairy – Advanced industrial applications of enzymes.

English References

de Man, J.M. (1990). Principles of Food Chemistry 2nd Ed. The AVI Book, Van Nost-Rand Reinhold, New York, USA.

Murray R. k., Daryl K. G., Peter A. M., Victor W.R. (2003). Harper's Illustrated Biochemistry. 26th Ed. Lange Medical Books/McGraw-Hill Co. Inc .

00412	Occupational safety and health	2 Lectures	2 Practs	3 Credit Hours
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The use of protective equipment and personal safety during work - First aid rules at work sites - Preservation of chemicals and flammable materials - Activating the concept of occupational safety inside factories and facilities - The role of the occupational safety supervisor - How to evacuate and deal with accidents in case of occurrence - Maintaining coordination with the Civil Defense for Occupational Safety and Health and the concerned authorities - Periodically leaflets, posters and posters and keeping pace with the developments in the work environment

in the field of public safety.

Arabic References:

- Al-Zahrani, Hassan. (2016). Occupational Safety and Health: Foundations and Practices. University Publishing House.
- Abdullah, Mustafa. (2017). Occupational Safety and Health Management: Principles and Applications. Dar al-Fikr al-Arabi.
- Hassan, Adel. (2018). Occupational Safety and Health in Industrial Work. Dar Al-Ma'arif.
- Sami, Ahmed. (2015). Principles of Occupational Safety and Health: Application in Work Environments. Anglo-Egyptian Library.

English References

- Goetsch, D. L. (2014). Introduction to Health and Safety in Construction (3rd ed.). Pearson.
- Kohn, J. P., & Mustard, J. (2013). Occupational Health and Safety Management: A Practical Approach. CRC Press.
- Hughes, P., & Ferrett, E. (2015). Introduction to Health and Safety at Work (7th ed.). Routledge.
- Barrett, L., & Taylor, M. (2018). Safety Management: A Human Approach. Wiley-Blackwell.
- O'Rourke, R. (2012). Occupational Health and Safety for Small and Medium-Sized Enterprises. Wiley-Blackwell.

02414	Agricultural electronic marketing	2 Lectures	2 Practs	3 Credit Hours
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Principles, Theories and Modern Trends in the Study of Economics Agricultural Marketing, Agricultural Production and Problems of Global and Egyptian Agricultural Agricultural Production, Consumption of Plant and Animal Agriculture in Egypt and the World, Internal and External Markets for Plant, Animal and Poultry Cultures and Egyptian Food Products, Technological Aspect of Agricultural Marketing, Packaging, Storage, Transportation, Market News and Marketing Risk, Agriculture Prices and Marketing Costs - Agriculture Markets Including Agriculture Exchanges and Their Foreign Trade, Marketing Cooperatives, Intermediaries and their Types, Agricultural Marketing Policies and Legislations in Egypt and Abroad, E-Commerce in terms of its Types, Means, Payment Methods and Obstacles

Arabic References:

- Fouad Mahmoud (2018). Agricultural e-marketing. Dar al-Fikr al-Arabi.
- Yousef Abdallah (2017). Agricultural Marketing Management in the Information Age. Anglo Library.

English References

- Kotler, P., Keller, K. L. (2016). *Marketing Management*. Pearson.
- Chaffey, D., & Ellis-Chadwick, F. (2019). *Digital Marketing*. Pearson.

Feasibility Study

About the project of establishing a program

Quality and Safety of Food Manufacturing

Faculty of Agriculture

University Damanhour

2025

Introduction: Stages of Industry Development in Egypt

In the modern era, Egypt witnessed a major industrial renaissance in the nineteenth century during the reign of Muhammad Ali, who established a huge industrial base that included the industries of textiles, sugar, oil press, and rice mills, in addition to the military industries, shipbuilding, and chemical manufacturing. In 1920, Banque Misr was founded with the heads of He led a campaign to promote the industry, through the establishment of major companies and factories that contributed to building an advanced national industry, and the Egyptians raised the slogan "Egyptian for Egyptian", which helped support local products. Then came the July Revolution of 1952 to complete the development process, and major industrial projects such as iron and steel, mining and petroleum industries were established, in addition to the chemical, textile, and food industries. Despite the negative impact of the 1967 war on the industrial sector, the industry began to recover after the victory of October 1973 and with the implementation of the policy of economic openness. In 1974, the Arab and Foreign Investment Promotion Law was issued, which contributed to attracting investments and stimulating various industries. With the stability of Egypt and the beginning of a new phase of development, supporting the Egyptian product has become a national goal. In the 1990s, the role of the private sector in the development of industry increased, and the state provided facilities and support to this vital sector. At the beginning of the 21st century, Egyptian industry entered a new phase of development, after being integrated with foreign and internal trade under the umbrella of a single ministry. Integrated programs have been implemented to modernize industry, increase the competitiveness of Egyptian products, raise exports, create a

suitable environment to attract industrial and commercial investments, and enhance the role of the private sector in achieving economic development.

The Impact of Small and Medium Food Processing Projects on Boosting Egyptian Exports

First: The importance of the food industry in supporting the Egyptian food economy

The agricultural sector in Egypt is one of the main sectors closely linked to the industrial sector, whether directly or indirectly, as it provides many industries with basic production requirements. Food processing comes as one of the most important branches of industry, due to its great economic impact, which contributes to increasing the added value of agricultural products and supports the national economy clearly, where:

The strategic and economic importance of the food industry can be limited to the Egyptian economy

- It maximizes the use of agricultural commodities and their conversion into industrial products.
- Increasing the added value of agricultural products.
- Achieving a relative balance between supply and demand in agricultural markets.
- Contributing to price stability and reducing seasonal fluctuations.
- Absorb surplus fresh produce and convert it into products that can be stored and consumed throughout the year.
- Creating new employment opportunities and providing relatively stable incomes.
- Opening wide and diverse export prospects for manufactured products.

Diversity of food processing projects in Egypt:

Egypt is characterized by the multiplicity of types of food processing projects compared to neighboring countries, and the most prominent of these projects are:

- Grinding and processing of grains.
- Dairy processing and dairy products.
- Processing of vegetables and fruits.
- Meat and fish processing.
- Non-traditional industries such as:
 - Medicinal and aromatic plants
 - Cultivation and processing of mushrooms for medicinal purposes

- Extraction and Processing of Natural Oils and Fats

Another point of excellence in Egypt is the presence of non-traditional food projects, especially those related to alternative agriculture such as:

- Medicinal and aromatic plants.
- Cultivation of mushrooms, especially species used for medicinal purposes.
- Natural Oils and Fats Projects.

These diverse types of food processing projects, especially small and medium-sized ones, contribute to the stimulation of exports and the opening of new markets, making them a key element in Egypt's economic and industrial development strategy.

Second: The Current Status of Egyptian Exports from the Food Industries

1. The development of Egyptian food exports

Despite the economic and political challenges that Egypt has gone through, especially after the events of the January 25 revolution and the turmoil that followed, Egyptian exports of food industries showed a good performance during the period from 2011 to 2017. These exports recorded a growth rate of approximately 33%, which is higher than the growth rate of Egyptian exports in general during the same period. This development confirms the pivotal role that the food industry can play in enhancing the export capacity of the Egyptian economy.

The development of Egyptian exports during the period from 2023 to 2024

Egyptian exports witnessed a remarkable growth during the period from 2023 to 2024, with an increase of about 21% compared to 2023.

Source: Data compiled from GOEIC reports.

2. The Contribution of Food Industries to Egyptian Exports

The contribution of food industry exports to total Egyptian exports ranged from **12% to 14%**, as it recorded its highest levels in **2023**. This percentage is expected to continue to rise in the coming years, supported by the increase in global demand for Egyptian food products, especially in strategic markets such as:

- Arab Gulf States
- Mediterranean countries
- Some European and Asian markets

These markets are one of the most prominent destinations for the Egyptian food industry, due to their growing need and confidence in the quality of the Egyptian product.

Distribution of Egyptian Food Industries Exports by International Conglomerates

The data indicates that Arab countries account for the largest share of Egypt's exports from food industries, with 73%, followed by the European Union countries with 14%, and then the rest of the world with 13%. This distribution is due to several important factors, including:

- The similarity of consumer tastes in Arab countries to the nature of the Egyptian food product.
- The geographical proximity between Egypt and these countries, which contributes to reducing transportation and shipping costs.
- Strong economic and trade relations between Egypt and the Arab countries.

All these factors provide promising opportunities to increase Egyptian food exports and enhance the competitiveness of the Egyptian product in those markets.

1. The most prominent exported commodities from the food industry

During the period from 2023 to 2024, a group of commodities emerged as the most exported products in the Egyptian food industry sector, the most important of which are:

- **Dairy products**, especially cooked cheese
- **Frozen Vegetables**
- **Juice concentrates**

At the same time, some **non-traditional industries have emerged** as promising opportunities, including:

- **Essential oils and resins**
- **Medicinal types of mushrooms**

These trends are positive indicators of the potential to exploit the great diversity of food processing projects in Egypt to support exports of non-traditional industries.

2. The Impact of Awareness on the Safety and Quality of Food Processing and Organic Agriculture

Growing awareness of the importance of **the safety and quality of food processing** and organic agriculture has led to significant breakthroughs in the exports of some vegetables and fruits, especially:

- **Strawberries**
- **Orange**

In 2017, Egypt ranked second in the European market in the export of these products after Spain, and in 2023 it reached the first place by a year as a result of a significant increase in the export volume.

5. Competitiveness in global markets

During the period from 2011 to 2017, the following markets were the most important for the Egyptian food industry:

- **UAE & Saudi Arabia** (Arab Markets)
- **Italy and Germany** (European Markets)

Despite the high competitiveness of Egyptian exports in the Arab markets, Egypt has not captured a large market share in them, despite the increase in demand and penetration rate.

In European markets, Egyptian exports faced **several difficulties**, including:

- Strict quality and safety requirements by the European Union
- Challenges in conforming to technical standards and specifications
- Weakness in packaging technologies and marketing services

It is noted that the exports of food industries to Europe were concentrated in:

- **Juice concentrates**
- **Tomato Paste**

These products are then used in manufacturing processes within Europe, reducing **the added value** for Egypt.

6. Recommendations to Enhance Competitiveness

- Focus on **manufacturing products locally** instead of exporting them as raw or semi-finished materials
- **Improving the quality of products** to comply with international standards
- **Packaging & Marketing Services Development**
- Developing **manufacturing and trade policies** that enhance value added and improve the Egyptian market share in global markets.

Third: The Role of Food Processing Projects in the Development of Egyptian Exports

Food processing projects are one of the most prominent sectors that can contribute effectively to supporting and developing Egyptian exports. The importance of this role lies in several key aspects, the most prominent of which are:

- **Diversify the structure of Egyptian exports**, reducing dependence on a limited number of commodities or markets.
- **Reducing the negative effects of seasonal or emergency fluctuations in raw agricultural exports.**
- **Contributing to the continuity of exports throughout the year**, which reflects positively on the national economy in terms of stabilizing cash flows and achieving regular income.
- **Increasing the added value** of exports by converting agricultural products into manufactured or semi-finished goods.

There is no doubt that **value added** is one of the most important economic benefits that the food industry can achieve. This value can be calculated by the difference between the total value of exports and the cost of imported production inputs, as well as the percentage of depreciation resulting from the manufacturing process.

To illustrate this with an applied example, the export value of a ton of Egyptian potatoes in its raw form can be compared with its value when it is manufactured:

- **Raw potatoes:** The average export price was about **\$487/ton** in 2017.
- **Frozen and partially cut potatoes:** The average price rose to **\$884/ton** for the same year after being processed industrially.

In other words, the difference in price reached **\$397 per ton exported**, which represents a significant increase in added value that supports the national economy and enhances the competitiveness of the Egyptian product.

Fourth: The Impact of Food Safety on Egyptian Exports

Food safety is a pivotal factor that affects the ability of countries to export agricultural and food products. Many countries around the world, especially since the beginning of the new millennium, have tended to adopt strict measures in this field, as regulatory bodies have been tasked with developing specifications and quality certificates that oblige food imports. The European Union has been one of the most stringent blocs in this regard, imposing strict standards regarding the safety of imported food products. At the local level, Egyptian agricultural and food exports faced major challenges during the period from 2011 to 2015, represented in:

- Increasing the number of shipments **rejected** by global markets due to non-conformity of products to specifications.
- **Lack of compliance with international standards** on food safety and quality.
- Weak technical and technical ability to keep pace with the rapid developments in the control and quality systems required globally.

These factors indicate the need **to give top priority to the modernization of quality control and food safety systems** in Egypt, as one of the basic conditions for improving export capacity and enhancing confidence in Egyptian products in foreign markets.

There are many indicators that confirm these facts, the most important of which are the following:

1- Egyptian potato exports to the Russian market

In the wake of the crisis of the century in 2014 and the subsequent political developments, Russia took a number of economic measures, including **a ban on the import of agricultural products from EU countries** in response to the sanctions imposed on it. This decision represented **an important opportunity for Egyptian products**, both agricultural and food, to enter the Russian market and compensate for the absence of European products. Egypt was expected to take advantage of this trade vacuum, and **increase its exports of fresh and processed agricultural goods to Russia**. However, the **appearance of shipments of Egyptian potatoes infected with brown mold disease, and others of onions infected with black mold**, led the Russian side to take **new strict measures** on the safety and quality of Egyptian products, which **missed a valuable opportunity** that was available to strengthen the Egyptian presence in the Russian market.

However, the **Egyptian government has moved quickly to address the situation** by taking measures aimed at **ensuring the safety and quality of exported agricultural and food products**, in order to preserve the reputation of Egyptian exports and enhance their competitiveness.

2- Egyptian exports to America and Europe were affected by the outbreak of Escherichia coli bacteria

Following the spread of E. coli in a number of European countries such as France and Germany, which led to **the death of 28 people and infected more than 400 cases**, reports from the European Food Safety Authority indicated that the source of the infection may be **related to a shipment of Egyptian fenugreek seeds** that was exported in 2009. These reports resulted in **a significant impact on the volume of Egyptian agricultural and food exports** to the European Union during the following year, **as they were recorded:**

- **Fruit exports decreased by 6%**
- **Vegetable exports decreased by 7%**

- **Decline in some exports of food industries by up to 15%**

3- Moving towards enhancing food safety in Egypt

As a result of the recurrence of these challenges, the **Egyptian state has begun to take serious steps towards unifying food control efforts** through the **establishment of a national authority for food safety**, after the task of control was distributed among more than 17 different entities under several ministries. This trend began at the beginning of the first decade of the twenty-first century, after **the Ministries of Trade and Industry, Health and Population, and Agriculture and Land Reclamation agreed** on the need for a single entity responsible for food safety. In 2007, **Decree of the Minister of Commerce and Industry No. 374** on the formation of a committee to conduct the procedures for the establishment of the National Food Safety Authority. This committee drafted a proposal for the establishment of the Authority and the establishment of an executive unit to take over the practical procedures to activate it, in preparation for submitting the law to the legislative authority for approval.

4. Approval of the establishment of the National Food Safety Authority

In the plenary session held on Monday, January 2, 2017, **the House of Representatives finally approved the law establishing the National Food Safety Authority**, and the law was published in the Official Gazette on January 10, 2017 under No. (1 of 2017). This was followed by the issuance **of the Prime Minister's Decree No. 683 of 2017 on the formation of the Board of Trustees** of the Authority, and another decision No. 1433 of 2017 on the formation of its Board of Directors. The National Food Safety Authority is **an independent body** that aims to **protect the health of consumers** Prior to the establishment of the Authority, the Food Safety Unit participated in several specialized committees to support the safety of certain types of food products, **the most prominent of which are:**

1. **The Steering Committee of the Egyptian System for the Quality and Safety of Medicinal and Aromatic Plant Products**, pursuant to the Decree of the Minister of Industry and Foreign Trade No. 205 of 2013.
2. **The Green Trade Project Steering Committee**, in accordance with the Minister of Commerce and Industry Decree No. 730 of 2013.
3. **The Steering Committee of the Quality and Safety System of Dairy Products**, with the aim of facilitating their export to global markets, which was formed by the Decree of the Minister of Industry, Trade and Small and Medium Enterprises No. 592 of 2014.

The Chairman of the Authority also participates in the membership of the boards of directors of a number of relevant entities, such as:

- **Consumer Protection Authority.**

- **Egyptian General Organization for Standardization and Quality.**

The above shows **the urgent need for graduates specialized in the field of food safety**, who are able to meet the needs of the labor market in this vital sector.

5. SWOT Analysis of Egyptian Food Industries Exports

Quadrant analysis is a strategic tool used to assess strengths, weaknesses, opportunities, and threats, both in the internal and external work environment, and is used in multiple areas such as development, management, and marketing.

First: Strengths

- Availability of local production requirements.
- Diverse experiences in food processing processes.
- The diversity of forms and types of food processing projects in Egypt.
- Having a sophisticated logistics infrastructure compared to some competing countries.
- Accumulation of experience in the field of food processing.

Second: Weaknesses

- Difficulties in international competitiveness.
- Technological challenges in production lines.
- Poor and inadequate human resources.
- Lack of long-term marketing plans that are compatible with agriculture, industry and export policies.
- Rising production costs, both in terms of wages and operating requirements.

Third: Available Opportunities

- Promising markets are witnessing an increasing demand for food products.
- The availability of export institutions that contribute to the opening of new markets.
- Increased government support for this sector is expected in the near future.
- Good export infrastructure helps in enhancing competitiveness.

Fourth: Threats

- High competitive power of other countries in overseas markets.
- Global developments and developments that may negatively affect Egypt's exports.

- Currency fluctuations and their impact on the cost of export.
- Misuse of pesticides and fertilizers, which may lead to pollution of the agricultural environment and prevent products from conforming to international standards.
- Tightening of technical specifications by some importing countries, especially the European Union countries.
- There is a widespread belief in some foreign markets that the safety standards in Egyptian food products are weak.

General Conclusion:

- The agro-industrialization sector represents one of the most important economic sectors in Egypt, due to its direct impact on agriculture and the economy.
- The diversity of the food industry in Egypt is one of the most prominent strengths that distinguish this sector.
- In recent years, Egypt's food industry exports have been affected by several factors, most notably political events and food safety issues.
- Despite the challenges, there is real potential for growth, and raising the efficiency of the human element is the key to achieving this, by training them on the basics of quality and food safety.

From what has been shown, it is recommended that:

- 1. The Egyptian government is adopting a promotional plan to increase Egyptian exports** from the food industry, especially in promising markets such as the UAE, Saudi Arabia, Sudan, and African countries.
- 2. Increasing coordination with the competent authorities** on the preparation of new graduates and training of veterans on modern developments in manufacturing technology , quality and safety.
- 3. Raising awareness among producers** about the specifications and procedures of exporting to different markets through specialized centers such as the Foreign Trade Training Center.
- 4. Pay more attention to food safety** and intensify control by the concerned authorities.

Survey of Investors and Owners of Industrial Establishments:

Investors confirmed that there are promising opportunities waiting to inject new investments in the food industry sector, including the processing of agricultural crops, sugar, oils, dietary supplements, and the production of raw materials and medicinal and aromatic plants. Investors considered this sector to be one of the fastest growing sectors in Egypt, as the Egyptian market has promising opportunities, including the ability to adapt to international standards and compete in global markets. The sector's exports increased by 2.3%, reaching \$2.73 billion at the end of 2016. In this context, Mr. Adel Khairat, Chairman of the Board of Directors of AMCO Oils and Food Industries Company, stated that the food industry sector is absorbing huge investments in the coming period. He pointed out that Egypt enjoys water, agricultural and natural resources that qualify it to compete globally.

With regard to agriculture and agro-industries projects: President Abdel Fattah El-Sisi pointed out the importance of land reclamation projects, such as the 1.5 million feddan reclamation project and the 100,000 greenhouse project, as part of the government's efforts to develop the agriculture and agro-industries sector. The establishment of the Food Safety Authority was also recently approved to ensure the application of scientific standards and health requirements during the stages of food production. **The most prominent export opportunities in the food industry sector:** Mr. Mohamed Shoukry, President of Misr Food Preparations Company, explained that the most prominent export opportunities lie in the oil sector and agricultural industries. He stressed the need to encourage local manufacturing and development of food industries to achieve self-sufficiency, pointing out that this requires supporting agriculture and implementing projects such as one and a half million acres.

Investment opportunities in the sugar industry: Mr. Raafat Raziqa, Chairman of the Board of Directors of Golden Foods, said that there are strong opportunities for investment in the sugar industry, especially with the availability of locally produced raw materials such as beets and sugar cane. He stressed that investing in the sugar industry will contribute to solving the local market crises related to imports and currency pressure.

Government support for the growth of the sector: The government continues its efforts to support the food industry sector, through the new investment law, and the provision of land and basic facilities for food projects. The Industrial Development Authority also aims to offer ready-made industrial parks to investors in various sectors, including the food industry.

Egyptian investments in international exhibitions: Reports indicated that international exhibitions, such as Gulfood in Dubai, represent a strategic opportunity to represent the Egyptian food industry and expand into the Gulf, Middle East, and Asian markets. A total of 131 Egyptian companies are expected to participate in the

exhibition, reflecting the growing interest in expanding the scope of Egyptian food industry exports.

Conclusion: The food industry sector is one of the most promising sectors in Egypt thanks to the available resources and capabilities. The government is making great efforts to overcome obstacles and provide an attractive investment environment, which helps support the growth of this sector. There is also great potential for expansion in this sector in the near future.

Recommendation: By observing the developments in the sector, it is possible to take advantage of the significant investment opportunities offered by the food industry. Therefore, there is a need to move forward with the implementation of specialized educational programs in "**Quality and Safety of Food Processing**" to improve the skills of graduates and meet the needs of the labor market, especially in light of the increasing demand for qualified labor in this sector.

Academic Benchmark

The proposed program is in line with several local and international academic references, and the following is a list of some of them, which were relied on in the construction of this proposal:

Country	University/Institution	Program Name
Egypt	Faculty of Agriculture, Saba Pasha, Alexandria University	Food Safety
Egypt	Faculty of Agriculture, Benha University	Food Safety
Egypt	Faculty of Agriculture, Suez Canal University	Food Safety
USA	California state university	Food Safety
Germany	Hochschule geisenheim university	Food Safety
UK	Queen's university belfast	Food Quality, Safety and Nutrition
UK	Coventry university	Food Safety, Inspection and Control
South Korea	Seoul national university	Food Science and Safety
USA	University of Wisconsin-Madison	Food Science