MASTER IN FOOD TECHNOLOGY

Main Language of Instruction:
French ☑ English ○ Arabic ○

Campus Where the Program Is Offered: CSM

OBJECTIVES

The Master in Food Technology prepares future professionals for the food industry by enhancing their scientific and technical expertise. It focuses on key areas such as technological processes, food safety, quality standards, production management, and the regulatory and commercial aspects of food products.

It integrates theoretical knowledge with practical applications, equipping students for various roles in the food sector, including research, management, and quality assurance.

Specialized courses in-depth exploration of specific areas within the food industry, allowing students to cultivate expertise in their chosen fields.

PROGRAM LEARNING OUTCOMES (COMPETENCIES)

- Manage a food production unit while addressing production, supply, and distribution challenges.
- Innovate and conduct research in the food sector.
- Implement and maintain quality control within food production units.
- Develop and promote sustainable practices within a food company.
- Design marketing strategies for food products.

ADMISSION REQUIREMENTS

Candidates must hold a Bachelor in nutrition and dietetics, agriculture, agronomy, food science, biology, chemistry, biochemistry, or laboratory sciences.

PROGRAM REQUIREMENTS

120 credits: Required Courses (120 Cr.)

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Food Additives and Processing Aids (2 Cr.). ISO Standards Implementation (2 Cr.). Communication and Leadership (2 Cr.). Food Packaging (2 Cr.). Food Legislation and Regulatory Affairs (2 Cr.). Geopolitics of Food (1 Cr.). Quality Assurance Management (2 Cr.). Applied Hydrology in Agri-Food Systems + SUPERVISED WORK (2 Cr.). Food Safety and Hygiene (2 Cr.). Veterinary Inspection (1 Cr.). Introduction to Experimental Design (1 Cr.). The Consumer and Their Environment + SUPERVISED WORK (2 Cr.). Industrial Logistics + SUPERVISED WORK (3 Cr.). Organizational Management and Leadership (2 Cr.). Food Systems Marketing + SUPERVISED WORK (3 Cr.). Industrial Food Microbiology + SUPERVISED WORK (2 Cr.). Unit Operations (3 Cr.). Physico-Chemistry of Dispersed Systems (2 Cr.). Project I: Food Packaging (1 Cr.). End-of-Study Project (17 Cr.). Food Technology Project I (2 Cr.). Food Technology Project II (2 Cr.). Sensory Properties and Evaluation of Food + SUPERVISED WORK (3 Cr.). Food Technology Seminar I (2 Cr.). Food Technology Seminar II (2 Cr.). Food Technology Seminar III (2 Cr.). Food Technology Internship (24 Cr.). Applied Statistics in Agri-Food Industry I (2 Cr.). Applied Statistics in Agri-Food Industry II (2 Cr.). Special Topics in Food Technology (1 Cr.). Introduction to Financial Accounting (2 Cr.). Advanced Food Technology (3 Cr.). Olive Oil Processing Technology (1 Cr.). Alcoholic Beverage Production Technology + Practical Work (2 Cr.). Non-Alcoholic Beverage Production Technology + Practical Work (2 Cr.). Chocolate, Confectionery, and Ice Cream Technology + Practical Work (1 Cr.). Mineral Water Production Technology (1 Cr.). Cereal Processing Technology (2 Cr.). Dairy Processing Technology (2 Cr.). Coffee Processing Technology + Practical Work (1 Cr.). Food Toxicology (3 Cr.). Logistics in Culinary Institutions + Practical Work (2 Cr.). Biomass Valorization in Food Systems (2 Cr.).

SUGGESTED STUDY PLAN

Semester 1

Code	Course Name	Credits
004EMBAM1	Food Packaging	2
004MAENM1	The Consumer and Their Environment + Supervised Work	2
004LOINM1	Industrial Logistics + SUPERVISED WORK	3
004MARKM2	Food Systems Marketing + SUPERVISED WORK	3
004OPUNM1	Unit Operations	3
004PCMDM1	Physico-Chemistry of Dispersed Systems	2
004PAELM1	Project I: Food Packaging	1
004PESAM1	Sensory Properties and Evaluation of Food + Supervised Work	3
004STEAM1	Food Technology Seminar I	2
004STATM1	Applied Statistics in Agri-Food Industry I	2
004TPOLM1	Olive Oil Processing Technology	1
004TBALM1	Alcoholic Beverage Production Technology + Practical Work	2
004TDCGM1	Non-Alcoholic Beverage Production Technology + Practical Work	2
004TCHCM1	Chocolate, Confectionery, and Ice Cream Technology + Practical Work	1
004TPCRM1	Cereal Processing Technology	2
004ARCUM1	Logistics in Culinary Institutions + Practical Work	2
	Total	**33**

Semester 2

Code	Course Name	Credits
004AAATM2	Food Additives and Processing Aids	2
004APPIM1	ISO Standards Implementation	2
004LCOMM2	Communication and Leadership	2
004HAAGM2	Applied Hydrology in Agri-Food Systems + Supervised Work	2
004HYGAM1	Food Safety and Hygiene	2
004GEQAM2	Quality Assurance Management	2
004INSAM1	Veterinary Inspection	1
004INCOM4	Introduction to Financial Accounting	2
004MGORM2	Organizational Management and Leadership	2
004MIAIM2	Industrial Food Microbiology + Supervised Work	2
004SAIAM2	Applied Statistics in Agri-Food Industry II	2
004TEAAM2	Advanced Food Technology	3
004TEAMM4	Mineral Water Production Technology	1
004TEPLM2	Dairy Processing Technology	2
004TECCM2	Coffee Processing Technology + Practical Work	1
	Total	**28**

Summer Semester

Code	Course Name	Credits
004FLARM2	Food laws and regulations	2
004SETEM2	Food Technology Seminar II	2
004PRJTM2	Food Technology Project I	2
004VABIM2	Biomass Valorization in Food Systems	2
	Total	**8**

Semester 3

Code	Course Name	Credits
004PRTEM3	Food Technology Project II	2
004SETEM3	Food Technology Seminar III	2
004STALM3	Food Technology Internship	24
004SPTAM2	Special Topics in Food Technology	1
004TPEXM4	Introduction to Experimental Design	1
	Total	**30**

Semester 4

Code	Course Name	Credits
004PRFEM4	End-of-Study Project	17
004TOALM2	Food Toxicology	3
004GEEAM1	Geopolitics of Food	1
	Total	**21**

COURSE DESCRIPTION

004AAATM2 Food Additives and Processing Aids 2 Cr.

This course studies various additives used in the food industry, their role, impact on the organoleptic quality and safety of food, and their regulation, as well as the use of processing aids in transformation processes.

004APPIM1 ISO Standards Implementation 2 Cr.

This course focuses on the application of ISO (International Organization for Standardization) standards in the food industry to ensure food safety and compliance with international regulations.

004LCOMM2 Communication and Leadership 2 Cr.

This course equips students with communication skills essential for working effectively in professional settings, with a focus on team management and interprofessional communication. It prepares students to become proficient communicators capable of engaging with all stakeholders.

004EMBAM1 Food Packaging 2 Cr.

This course covers the characteristics of packaging materials, selection criteria, and their effects on the preservation, protection, and marketing of food products. It also addresses regulatory aspects, environmental considerations, and the latest innovations in the field.

004FLARM2 Food Legislation and Regulatory Affairs 2 Cr.

This course explores the significance and evolution of food legislation, food standards, codes of practice, and specifications at both national and international levels. It examines the legal frameworks of major systems, including potential export countries for Lebanon. Students will learn to interpret regulatory content and apply it to meet the professional needs of the food industry.

004GEEAM1 Geopolitics of Food 1 Cr.

This course examines the geopolitical, economic, and sociocultural factors influencing food production, distribution, and consumption at local, regional, and global levels. It highlights the importance of the relationship between water resources and geopolitical issues, as well as strategic challenges.

004GEQAM2 Quality Assurance Management 2 Cr.

This course explores the principles and practices of quality management within food production, storage, and marketing units. It covers international quality standards, quality management systems, auditing and control methodologies, and the implementation of strategies to ensure food safety and consumer satisfaction.

004HAAGM2 Applied Hydrology in Agri-Food Systems + Supervised Work 2 Cr.

This course examines water in the food industry, focusing on its roles as a production tool (for heating, cooling, cooking, blanching, etc.) and as an ingredient in formulations. It addresses sustainable water management and its impact on food production. Practical work complements theoretical knowledge, allowing students to develop essential hands-on skills.

004HYGAM1 Food Safety and Hygiene 2 Cr.

This course focuses on cleaning and disinfection operations within food production units to ensure food safety and quality.

004INSAM1 Veterinary Inspection 1 Cr.

This course covers the principles and techniques of veterinary inspection for animal-derived food products to ensure their quality and safety.

004INCOM4 Introduction to Financial Accounting 2 Cr.

This course introduces students to the accounting principles applied in agri-food companies, including the understanding of financial statements and economic analyses.

004TPEXM4 Introduction to Experimental Design 1 Cr.

This course introduces the statistical Design of Experiments (DOE) methodology, enabling students to plan and conduct experiments efficiently and cost-effectively. It employs statistical techniques to draw reliable, meaningful, and extrapolable conclusions from the collected data.

004MAENM1 The Consumer and Their Environment + Supervised Work 2 Cr.

This course examines the relationships between dietary habits, consumer behaviors, and individuals' sociocultural environments.

004LOINM1 Industrial Logistics + Supervised Work 3 Cr.

This course explores the principles of supply chain management in the food sector. It examines approaches to optimize the effectiveness, efficiency, and profitability of operations within this chain, illustrated through practical work simulating industrial contexts.

004MGORM2 Organizational Management and Leadership 2 Cr.

This course equips students with essential skills in entrepreneurship and project management. It covers strategic analysis of the business and its environment, focusing on operations that create value for the end consumer. It aims to enhance performance, optimize allocated resources, and implement a comprehensive quality management approach.

004MARKM2 Food Systems Marketing + Supervised Work 3 Cr.

This course provides a foundational understanding of key marketing concepts and examines how businesses cultivate and manage their relationships with customers. Students will learn to understand customer behaviors and design their offerings to optimize competitive positioning in the market. This course focuses on developing a marketing plan, enabling students to master the components of the marketing mix and make informed operational decisions. Ultimately, it seeks to analyze and apply strategies and marketing plans in the fields of nutrition and agri-food.

004MIAIM2 Industrial Food Microbiology + Supervised Work 2 Cr.

This course explores microorganisms as both agents of spoilage and tools for food production. It emphasizes the practical application of microbiological knowledge in the food industry, covering key aspects such as the role of microorganisms in food production, the microbiological shelf life of products, biofilms, and disinfection processes within the food industry.

004OPUNM1 Unit Operations 3 Cr.

This course provides a foundational understanding of the fundamental principles of unit operations in food process engineering, focusing particularly on heat and mass transfer, which are essential for the design and optimization of industrial processes.

004PCMDM1 Physico-Chemistry of Dispersed Systems 2 Cr.

This course examines the physicochemical properties, reactivities, preservation, and stabilization of multiphase food matrices, such as milk and sauces.

004PAELM1 Project I: Food Packaging 1 Cr.

This project focuses on designing and developing food packaging based on specific requirements, including improved food preservation, reduced environmental impact, and innovation.

004PRFEM4 End-of-Study Project 17 Cr.

This food technology project entails a comprehensive research focused on a specific topic within the food industry. It aims to demonstrate the knowledge acquired throughout the program, conduct thorough scientific research, and propose innovative solutions relevant to the sector. Students will highlight their analytical skills, creativity, and expertise. Potential research topics include innovations in food production processes, enhancements in product quality, exploration of new food ingredients, and analysis of market trends. This project involves extensive research, data collection, laboratory experiments, and field surveys, culminating in meaningful conclusions that address real-world challenges or investigate novel concepts in the field.

004PRJTM2 Food Technology Project I 2 Cr.

This project involves a practical and applied study of a specific issue in the field of food technology, focusing on solving real-world problems encountered in the industry. It allows students to address the challenges of information gathering and interpretation in real-life settings. Students are also required to communicate their findings both in writing (report) and visually (e-poster).

004PRTEM3 Food Technology Project II 2 Cr.

This project requires students to conduct fieldwork and present their findings through both written reports and visual displays. The focus is on a preliminary study that prepares students for their end-of-study project. By addressing a specific issue within food technology, students will enhance their problem-solving skills while navigating real-life settings.

004PESAM1 Sensory Properties and Evaluation of Food + Supervised Work 3 Cr.

This course studies the sensory properties of food and the methods for organoleptic evaluation, including guided practical work to apply the concepts learned.

004STEAM1 Food Technology Seminar I 2 Cr.

This seminar involves preparing and presenting an oral literature review on advanced topics in food technology. It equips students with critical thinking skills for effective information research.

004SETEM2 Food Technology Seminar II 2 Cr.

This seminar involves preparing and presenting an oral literature review on advanced topics in food technology. It equips students with enhanced scientific and professional communication skills.

004SETEM3 Food Technology Seminar III 2 Cr.

This seminar focuses on the bibliographic research for the end-of-study project. It enables students to gather and synthesize information relevant to their research topic and present it before a jury, which will assist in refining their study.

004STALM3 Food Technology Internship 24 Cr.

This internship extends for a minimum of six months, and must be completed in a food production facility, an agro-food consulting firm, or a public organization (such as a ministry) focused on food production issues. It provides practical experience in a professional setting, allowing students to apply their theoretical knowledge while understanding the industry's operational realities. Guided by both an academic supervisor and an experienced professional, students will work on specific projects, including optimizing production processes, ensuring quality control, researching and developing new products, or enhancing food safety standards. This experience allows students to improve their skills, explore various roles within the agro-food sector, and prepare for their future careers.

004STATM1 Applied Statistics in Agri-Food Industry I 2 Cr.

This course introduces the fundamentals of statistical methods used for data analysis. It provides a practical approach to applying statistical techniques in contexts related to the agro-food industry.

004SAIAM2 Applied Statistics in Agri-Food Industry II 2 Cr.

This course emphasizes practical applications in the food sector, equipping students with the tools needed to analyze, interpret, and make data-driven decisions in their future careers.

004SPTAM2 Special Topics in Food Technology 1 Cr.

This course addresses current topics in the food sector, focusing on recent innovations, emerging trends, and specific areas of research.

004TEAAM2 Advanced Food Technology 3 Cr.

This course highlights advanced concepts and foundational principles of food processing and preservation. It covers both thermal and non-thermal treatment methods, along with traditional and alternative approaches to food transformation and preservation.

004TPOLM1 Olive Oil Processing Technology 1 Cr.

This course outlines the processes involved in the production and processing of olive oil, as well as the quality criteria and regulatory framework governing this product.

004TBALM1 Alcoholic Beverage Production Technology + Practical Work 2 Cr.

This course examines the manufacturing processes of alcoholic beverages, specifically wine and beer, covering technological and regulatory aspects from production to preservation.

004TDCGM1 Non-Alcoholic Beverage Production Technology + Practical Work 2 Cr.

This course focuses on the study of production processes and quality criteria for non-alcoholic beverages such as juices, concentrates, and carbonated drinks.

004TCHCM1 Chocolate, Confectionery, and Ice Cream Technology + Practical Work 1 Cr.

This course covers the specific techniques for producing confectionery, chocolates, and ice creams, along with their unique quality criteria.

004TEAMM4 Mineral Water Production Technology 1 Cr.

This course emphasizes the regulations, quality criteria, and purification and bottling processes for mineral waters.

004TPCRM1 Cereal Processing Technology 2 Cr.

This course covers the technologies for transforming cereals into usable products in the agro-food industry, such as flours, semolina, and by-products, along with the major categories of products made from these ingredients.

004TEPLM2 Dairy Processing Technology 2 Cr.

This course addresses the scientific and technological aspects of transforming milk into dairy products, including yogurt, cheese, and powdered milk.

004TECCM2 Coffee Processing Technology + Practical Work 1 Cr.

This course focuses on the coffee production process, covering everything from cultivation to the preparation of the final product, including various stages of manufacturing.

004ARCUM1 Logistics in Culinary Institutions + Practical Work 2 Cr.

This course introduces students to the logistical management of culinary institutions, such as restaurants, hotels, and catering kitchens. It emphasizes inventory management, menu planning, and the optimization of logistical processes to meet food demand.

004VABIM2 Biomass Valorization in Food Systems 2 Cr.

This course explores sustainable methods for utilizing organic materials from plant or animal sources in the agro-food sector. It covers processes for converting biomass into biochemical products, biofuels, or bio-based materials. This course emphasizes environmentally friendly transformation techniques and examines the economic, environmental, and social aspects of using biomass as a renewable resource.

004TOALM2 Food Toxicology 3 Cr.

This course examines the risks associated with potentially harmful substances present in food matrices or formed as a result of processing methods. It focuses on studying contaminants, their effects on human health, and risk assessment methods to ensure food safety and consumer protection. The regulatory aspects are also addressed, along with prevention strategies to minimize exposure to these toxins. Students gain a comprehensive understanding of the risks and protocols for assessing and managing these risks in the food industry.