

## 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 offer 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 credits.)****Required Courses (120 Cr.)**

Food Additives and Processing Aids (2 Cr.). ISO Standards for the Food Sector (2 Cr.). Communication and Leadership (2 Cr.). Food Packaging (2 Cr.). Food Laws and Regulations (2 Cr.). Food Geopolitics (1 Cr.). Quality Management (2 Cr.). Applied Hydrology in Agri-Food Systems + Practical Work (2 Cr.). Food Safety and Hygiene (2 Cr.). Veterinary Inspection (1 Cr.). Introduction to Accounting (2 Cr.). Introduction to the Design of Experiments (1 Cr.). Food Consumer Behavior + Practical Work (2 Cr.). Supply Chain Management + Practical Work (3 Cr.). Applied Management (2 Cr.). Marketing in the Food Sector + Practical Work (3 Cr.). Advanced Research Methodology (3 Cr.). Industrial Food Microbiology + Practical Work (2 Cr.). Food Process Engineering (3 Cr.). Physico-chemistry of Dispersed Systems (2 Cr.). Food Packaging Project (1 Cr.). End-of-Study Project (17 Cr.). Food Technology Project 1 (2 Cr.). Food Technology Project 2 (2 Cr.). Sensory Properties and Evaluation of Food + Practical Work (3 Cr.). Research Seminar (1 Cr.). Food Technology Seminar 1 (2 Cr.). Food Technology Internship (24 Cr.). Applied Statistics 1 (2 Cr.). Applied Statistics 2 (2 Cr.). Special Topics in Food Technology (1 Cr.). Advanced Food Technology (3 Cr.). Olive Oil Technology (1 Cr.). Alcoholic Beverages Technology + Practical Work (2 Cr.). Non-Alcoholic Beverages Technology + Practical Work (2 Cr.). Chocolate, Confectionery Products and Ice Cream Technology + Practical Work (1 Cr.). Mineral Water Technology (1 Cr.). Cereal Products Technology (2 Cr.). Dairy Products Technology (2 Cr.). Coffee Technology + Practical Work (1 Cr.). Food Toxicology (3 Cr.). Advanced Food Service Management (2 Cr.). Valorization of Food Processing By-products (2 Cr.).

## SUGGESTED STUDY PLAN

### Semester 1

Code	Course Name	Credits
004FLARM2	Food Laws and Regulations	2
004HAAGM2	Applied Hydrology in Agri-Food Systems + Practical Work	2
004MAENM1	Food Consumer Behavior + Practical Work	2
004LOINM1	Supply Chain Management + Practical Work	3
004MARKM2	Marketing in the Food Sector + Practical Work	3
004OPUNM1	Food Process Engineering	3
004PCMDM1	Physico-chemistry of Dispersed Systems	2
004STEAM1	Food Technology Seminar 1	2
004TPOLM1	Olive Oil Technology	1
004TBALM1	Alcoholic Beverages Technology + Practical Work	2
004TDCGM1	Non-Alcoholic Beverages Technology + Practical Work	2
004TCHCM1	Chocolate, Confectionery Products and Ice Cream Technology + Practical Work	1
004TPCRM1	Cereal Products Technology	2
004TECCM2	Coffee Technology + Practical Work	1
004ARCUM1	Advanced Food Service Management	2
<b>Total</b>		<b>30</b>

### Semester 2

Code	Course Name	Credits
004AAATM2	Food Additives and Processing Aids	2
004APPIM2	ISO Standards for the Food Sector	2
004EMBAM1	Food Packaging	2
004HYGAM2	Food Safety and Hygiene	2
004INSAM2	Veterinary Inspection	1
004MGORM2	Applied Management	2
004MIAIM2	Industrial Food Microbiology + Practical Work	2
004PAELM1	Food Packaging Project	1
004PESAM1	Sensory Properties and Evaluation of Food + Practical Work	3
004STATM1	Applied Statistics 1	2
004TEAAM2	Advanced Food Technology	3
004TEAMM4	Mineral Water Technology	1
004TEPLM2	Dairy Products Technology	2
004TOALM2	Food Toxicology	3
004VABIM2	Valorization of Food Processing By-products	2
<b>Total</b>		<b>30</b>

### Summer Trimester

Code	Course Name	Credits
004GEQAM2	Quality Management	2
004INCOM4	Introduction to Accounting	2
004PRJTM2	Food Technology Project 1	2
004SAIAM2	Applied Statistics 2	2
	<b>Total</b>	<b>8</b>

### Semester 3

Code	Course Name	Credits
004LCOMM2	Communication and Leadership	2
004MEREM1	Advanced Research Methodology	3
004SRNTM1	Research Seminar	1
004STALM3	Food Technology Internship	24
	<b>Total</b>	<b>30</b>

### Semester 4

Code	Course Name	Credits
004GEEAM1	Food Geopolitics	1
004TPEXM4	Introduction to the Design of Experiments	1
004PJINM4	End-of-Study Project	17
004PRTEM3	Food Technology Project 2	2
004SPTAM2	Special Topics in Food Technology	1
	<b>Total</b>	<b>22</b>

### COURSE DESCRIPTION

<b>004AAATM2</b>	<b>Food Additives and Processing Aids</b>	<b>2 Cr.</b>
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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.

<b>004APPIM2</b>	<b>ISO Standards for the Food Sector</b>	<b>2 Cr.</b>
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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.

<b>004LCOMM2</b>	<b>Communication and Leadership</b>	<b>2 Cr.</b>
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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.

<b>004EMBAM1</b>	<b>Food Packaging</b>	<b>2 Cr.</b>
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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.

<b>004FLARM2</b>	<b>Food Laws and Regulations</b>	<b>2 Cr.</b>
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.		
<b>004GEEAM1</b>	<b>Food Geopolitics</b>	<b>1 Cr.</b>
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.		
<b>004GEQAM2</b>	<b>Quality Management</b>	<b>2 Cr.</b>
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.		
<b>004HAAGM2</b>	<b>Applied Hydrology in Agri-Food Systems + Practical Work</b>	<b>2 Cr.</b>
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.		
<b>004HYGAM2</b>	<b>Food Safety and Hygiene</b>	<b>2 Cr.</b>
This course focuses on cleaning and disinfection operations within food production units to ensure food safety and quality.		
<b>004INSAM2</b>	<b>Veterinary Inspection</b>	<b>1 Cr.</b>
This course covers the principles and techniques of veterinary inspection for animal-derived food products to ensure their quality and safety.		
<b>004INCOM4</b>	<b>Introduction to Accounting</b>	<b>2 Cr.</b>
This course introduces students to the accounting principles applied in agri-food companies, including the understanding of financial statements and economic analyses.		
<b>004TPEXM4</b>	<b>Introduction to the Design of Experiments</b>	<b>1 Cr.</b>
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.		
<b>004MAENM1</b>	<b>Food Consumer Behavior + Practical Work</b>	<b>2 Cr.</b>
This course examines the relationships between dietary habits, consumer behaviors, and individuals' sociocultural environments.		
<b>004LOINM1</b>	<b>Supply Chain Management + Practical Work</b>	<b>3 Cr.</b>
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.		

<b>004MGORM2</b>	<b>Applied Management</b>	<b>2 Cr.</b>
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.		
<b>004MARKM2</b>	<b>Marketing in the Food Sector + Practical Work</b>	<b>3 Cr.</b>
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.		
<b>004MEREM1</b>	<b>Advanced Research Methodology</b>	<b>3 Cr.</b>
This course introduces students to the principles of research design and methods used in both qualitative and quantitative research. Students will learn how to plan and implement the various stages of the research process, including study protocol development.		
<b>004MIAIM2</b>	<b>Industrial Food Microbiology + Practical Work</b>	<b>2 Cr.</b>
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.		
<b>004OPUNM1</b>	<b>Food Process Engineering</b>	<b>3 Cr.</b>
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.		
<b>004PCMDM1</b>	<b>Physico-chemistry of Dispersed Systems</b>	<b>2 Cr.</b>
This course examines the physicochemical properties, reactivities, preservation, and stabilization of multiphase food matrices, such as milk and sauces.		
<b>004PAELM1</b>	<b>Food Packaging Project</b>	<b>1 Cr.</b>
This project focuses on designing and developing food packaging based on specific requirements, including improved food preservation, reduced environmental impact, and innovation.		
<b>004PJINM4</b>	<b>End-of-Study Project</b>	<b>17 Cr.</b>
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.		
<b>004PRJTM2</b>	<b>Food Technology Project 1</b>	<b>2 Cr.</b>
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).		

<b>004PRTEM3</b>	<b>Food Technology Project 2</b>	<b>2 Cr.</b>
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.		
<b>004PESAM1</b>	<b>Sensory Properties and Evaluation of Food + Practical Work</b>	<b>3 Cr.</b>
This course studies the sensory properties of food and the methods for organoleptic evaluation, including guided practical work to apply the concepts learned.		
<b>004SRNTM1</b>	<b>Research Seminar</b>	<b>1 Cr.</b>
The research seminar involves the preparation and (oral) presentation of a bibliographical study exploring a topical issue in the world of food. It enables students to collect, analyze and summarize the available data on their subject, and then to present it to a scientific audience.		
<b>004STEAM1</b>	<b>Food Technology Seminar 1</b>	<b>2 Cr.</b>
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.		
<b>004STALM3</b>	<b>Food Technology Internship</b>	<b>24 Cr.</b>
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.		
<b>004STATM1</b>	<b>Applied Statistics 1</b>	<b>2 Cr.</b>
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.		
<b>004SAIAM2</b>	<b>Applied Statistics 2</b>	<b>2 Cr.</b>
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.		
<b>004SPTAM2</b>	<b>Special Topics in Food Technology</b>	<b>1 Cr.</b>
This course addresses current topics in the food sector, focusing on recent innovations, emerging trends, and specific areas of research.		
<b>004TEAAM2</b>	<b>Advanced Food Technology</b>	<b>3 Cr.</b>
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.		
<b>004TPOLM1</b>	<b>Olive Oil Technology</b>	<b>1 Cr.</b>
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.		

<b>004TBALM1</b>	<b>Alcoholic Beverages Technology + Practical Work</b>	<b>2 Cr.</b>
This course examines the manufacturing processes of alcoholic beverages, specifically wine and beer, covering technological and regulatory aspects from production to preservation.		
<b>004TDCGM1</b>	<b>Non-Alcoholic Beverages Technology + Practical Work</b>	<b>2 Cr.</b>
This course focuses on the study of production processes and quality criteria for non-alcoholic beverages such as juices, concentrates, and carbonated drinks.		
<b>004TCHCM1</b>	<b>Chocolate, Confectionery Products and Ice Cream Technology + Practical Work</b>	<b>1 Cr.</b>
This course covers the specific techniques for producing confectionery, chocolates, and ice creams, along with their unique quality criteria.		
<b>004TEAMM4</b>	<b>Mineral Water Technology</b>	<b>1 Cr.</b>
This course emphasizes the regulations, quality criteria, and purification and bottling processes for mineral waters.		
<b>004TPCRM1</b>	<b>Cereal Products Technology</b>	<b>2 Cr.</b>
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.		
<b>004TEPLM2</b>	<b>Dairy Products Technology</b>	<b>2 Cr.</b>
This course addresses the scientific and technological aspects of transforming milk into dairy products, including yogurt, cheese, and powdered milk.		
<b>004TECCM2</b>	<b>Coffee Technology + Practical Work</b>	<b>1 Cr.</b>
This course focuses on the coffee production process, covering everything from cultivation to the preparation of the final product, including various stages of manufacturing.		
<b>004ARCUM1</b>	<b>Advanced Food Service Management</b>	<b>2 Cr.</b>
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.		
<b>004VABIM2</b>	<b>Valorization of Food Processing By-products</b>	<b>2 Cr.</b>
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.		
<b>004TOALM2</b>	<b>Food Toxicology</b>	<b>3 Cr.</b>
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 will gain a comprehensive understanding of the risks and protocols for assessing and managing these risks in the food industry.		