

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)**

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

SUGGESTED STUDY PLAN

Semester 1

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

Semester 2

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

Summer Trimester

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

Semester 3

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

Semester 4

Code	Course Name	Credits
004PJINM4	End-of-Study Project	17
004GEEAM4	Food Geopolitics	1
004PRTEM3	Food Technology Project 2	2
004IPEXM4	Introduction to the Design of Experiments	1
004SPTAM2	Special Topics in Food Technology	1
	Total	22

COURSE DESCRIPTION

004ARCUM1 **Advanced Food Service Management** **2 Cr.**

This course introduces students to the planning and management of a food production and consumption project (food and/or beverages) at a commercial (non-industrial) scale. It also covers the management and logistics of public or private food service institutions, including direct catering, subcontracting, and out-of-home dining. The course integrates conceptual, organizational, spatial, economic, and operational dimensions of food service.

It examines the different types of food production and/or consumption establishments, ensuring alignment between concept, menu, target clientele, and location. Students will also explore front-of-house and back-of-house space organization, principles of workflow and food safety (including forward flow), equipment knowledge, and the fundamentals of technical and economic management for such projects. The course adopts an applied approach that bridges theory and real-world practice through case studies, industry examples, group work, and several professional site visits. By the end of the course, students will be able to analyze the functioning of a food production and consumption institution, evaluate its logistical and organizational choices, and apply basic decision-making tools within commercial or institutional food service contexts.

004TEAM2 **Advanced Food Technology** **3 Cr.**

The aim of this course is to deepen students' understanding of advanced food processing and preservation technologies, highlighting their role in improving the nutritional, sanitary, and organoleptic quality of food products.



The course combines targeted theoretical input on both conventional and innovative processes (thermal and non-thermal technologies, extrusion, encapsulation, enzymes, and cold chain management) with an active learning approach.

Within this framework, students explore current issues in the agri-food sector through an individual project involving a professional case-study approach. This enables them to analyze real-world problems and propose innovative solutions while taking into account technical, economic, regulatory, and societal constraints.

The course therefore emphasizes the development of key learning outcomes such as analysis, innovation, decision-making, and communication within a complex and multidisciplinary agri-food environment.

004MEREM1	Advanced Research Methodology	3 Cr.
------------------	--------------------------------------	--------------

This course aims to develop students' operational mastery of scientific research methods applied to the fields of nutrition and food technology. It covers the entire research process, from the formulation of a relevant research question to the design of a structured protocol, incorporating both quantitative and qualitative approaches, sampling methods, data collection tools, and principles of data analysis.

Particular emphasis is placed on literature review, methodological rigor, and ethical and scientific considerations. Through tutorials and the preparation of a research proposal, students develop their ability to design, structure, and promote a research project addressing real-world issues.

004TBALM1	Alcoholic Beverages Technology + Practical Work	2 Cr.
------------------	--	--------------

This course aims to introduce students to the scientific and technological principles involved in the production of various alcoholic beverages. It covers the raw materials used, the mechanisms of alcoholic fermentation, as well as the technological processes of transformation, distillation, and maturation.

This course also enables students to understand the parameters that influence product quality, the methods of quality control, and the hygienic conditions required throughout the entire production process. Students will acquire the fundamental scientific and technological knowledge necessary to understand the production of different alcoholic beverages such as beer, wine, and spirits.

Through theoretical lectures and case studies, students will develop their knowledge and analytical skills in the field of alcoholic beverage technology.

004HAAGM2	Applied Hydrology in Agri-food Systems + Practical Work	2 Cr.
------------------	--	--------------

This course provides a foundational understanding of the operation and design of treatment methods for process water and agri-food effluents, while integrating a microbiological perspective. Physico-chemical and biological parameters are also presented within the European legislative framework (Water Framework Directive) and the national context, including the various water quality assessment standards according to intended uses.

This course enables students to develop the following learning outcomes:

- C2. Innovate and conduct research in the food sector.
- C3. Implement and maintain quality control within food production units.
- C4. Develop and promote sustainable practices within a food company.

004MGORM2	Applied Management	2 Cr.
------------------	---------------------------	--------------

This course introduces students to the fundamental principles of management and applied organizational management, with a particular focus on their relevance to the fields of food, nutrition, and value chain related projects. It covers the historical evolution of management, major schools of organizational thought, managerial functions, market dynamics, value creation, business strategy, stakeholder analysis, risk identification, and the basics of project planning and financing.

The course also aims to familiarize students with key analytical and managerial tools used in professional contexts, including market research, feasibility analysis, critical success factors, risk assessment, budgeting, project scheduling, and the structured presentation of an action plan.

It combines theoretical input with practical examples, discussions, and group work, enabling students to connect management concepts with real-world organizational practices and project management needs.



004STATM1	Applied Statistics 1	2 Cr.
------------------	-----------------------------	--------------

This course contributes to students' understanding of the principles underlying the application of statistical methods in the field of food science and technology. It also aims to familiarize students with statistical analysis tools, particularly SPSS, including its main features, methods of use, and techniques for data management and analysis.

This course contributes to the development of the following learning outcomes:

- C1. Manage a food production unit while addressing production, supply, and distribution challenges
- C2. Innovate and conduct research in the food sector.
- C3. Implement and maintain quality control within food production units.
- C5. Design marketing strategies for food products.

004SAIAM2	Applied Statistics 2	2 Cr.
------------------	-----------------------------	--------------

This course contributes to students' understanding of the principles underlying the application of statistical methods in the field of food science and technology. It also aims to familiarize students with statistical analysis tools, particularly SPSS, including its main features, methods of use, and techniques for data management and analysis.

004TPCRM1	Cereal Products Technology	2 Cr.
------------------	-----------------------------------	--------------

This course provides students with an understanding of the scientific and technological fundamentals of cereal processing, with a particular focus on wheat and flour. It covers the different classes of wheat, the structure and composition of the grain, and the main industrial operations involved from wheat reception to the production of flour tailored to specific technological applications.

The course also addresses pre-cleaning, cleaning, storage, conditioning, and milling processes, as well as the role of associated industrial equipment. In addition, it examines the relationships between the physicochemical, enzymatic, and rheological properties of wheat and flour and their technological performance, particularly in breadmaking.

Instruction is supported by applied explanations, real industrial examples, case studies, and a factory visit, allowing students to connect theoretical concepts with practical, real-world applications.

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

This course aims to provide students with fundamental knowledge of chocolate, confectionery, and ice cream technologies. It covers the production, processing, packaging, and preservation techniques associated with these products. The first part focuses on the chocolate and confectionery industry. It presents the main raw materials used worldwide, as well as the various stages involved in manufacturing, processing, and packaging. The second part covers the technologies of ice cream, sorbets, and sherbets. It addresses the characteristics and properties of the raw materials used in the production of frozen desserts, as well as their influence on production processes, product stability, and the quality of the finished product.

This course enables students to develop the following learning outcomes:

- C1. Manage a food production unit while addressing production, supply, and distribution challenges
- C3. Implement and maintain quality control within food production units.
- C4. Develop and promote sustainable practices within a food company.
- C5. Design marketing strategies for food products.

004TECCM2	Coffee Technology + Practical Work	1 Cr.
------------------	---	--------------

This course aims to provide students with an integrated understanding of the coffee value chain, from the origin of the bean and cultivation conditions to industrial processing operations, including roasting, grinding, extraction, decaffeination, packaging, and sensory evaluation.

The course also covers the chemical composition of coffee, the impact of processing methods on final product quality, the main preparation techniques, as well as issues related to food safety, preservation, contaminants, and market trends.



Practical sessions and an industry visit allow students to apply their knowledge in real-life contexts of production, quality control, and technological valorization of coffee. At the end of this course, students will be able to:

- C1. Manage a food production unit while addressing production, supply, and distribution challenges
- C3. Implement and maintain quality control within food production units.
- C4. Develop and promote sustainable practices within a food company.
- C5. Design marketing strategies for food products.

004LCOMM2	Communication and Leadership	2 Cr.
------------------	-------------------------------------	--------------

This course aims to develop essential transversal skills required for assuming responsibilities in the professional world. It covers the foundations of interpersonal communication, including active listening, verbal and nonverbal language, conflict management, and key leadership principles applied to teamwork.

The course also explores different leadership styles, with a particular focus on situational leadership, as well as motivation mechanisms, the roles of a leader within team dynamics, and strategies for enhancing individual and collective resilience in the face of change and professional constraints.

The pedagogical approach combines theoretical input with self-assessments, case studies, simulations, and an integrative project designed to apply acquired knowledge in a practical context.

004TEPLM2	Dairy Products Technology	2 Cr.
------------------	----------------------------------	--------------

This course aims to introduce students to the scientific and technological principles related to milk processing and the production of dairy products. It covers the composition and properties of milk, the various technological operations applied during its processing, and the manufacturing processes of different products such as fermented milk, yogurt, cheese, and butter. Particular attention is given to quality, hygiene, and preservation aspects to ensure the safety and quality of the final products.

004PJINM4	End-of-Study Project	17 Cr.
------------------	-----------------------------	---------------

The Final Year Project (FYP) in Food Technology represents the culmination of the Master's academic program. It consists of an in-depth, structured individual research project that allows students to explore, analyze, and rigorously address a specific challenge within the agri-food sector.

This project aligns with the pedagogical approach of the Master's program in Food Technology, which is intentionally multidisciplinary. Throughout the program, students will acquire knowledge in various areas of the food system, including food processing, quality and safety, product innovation, as well as management and marketing of food products. In this context, the FYP plays a central role by enabling students to refine their academic pathway and specialize in a domain that matches their interests, skills, and career objectives.

Through this project, students will move from a broad and multidisciplinary foundation to a deeper specialization in a particular field of food technology. Depending on the chosen topic, the project may focus on:

- Research and development (R&D)
- Optimization of food processing techniques
- Product quality improvement
- Food formulation and innovation
- Study of novel food ingredients
- Consumer behavior and food market trends

The project is conducted under the supervision of an academic advisor, who guides the student in defining the research problem, selecting an appropriate methodology, conducting scientific work, and interpreting results. This process also aims to integrate and apply the knowledge and skills acquired throughout the program.

The FYP requires the implementation of a complete scientific approach. Students must:

- Identify a relevant research problem
 - Conduct a critical literature review
 - Define an appropriate methodology
 - Collect and analyze data
 - Interpret and discuss the results
- 



Depending on the nature of the topic, the project may include laboratory experiments, sensory analysis, or surveys involving consumers or stakeholders in the food sector. In some cases, the project may be application-oriented and conducted within an industrial setting, such as:

- Implementing or improving a quality management system (e.g., HACCP, ISO standards, or other sector-specific frameworks)
- Analyzing and reducing inefficiencies or losses in a production line

Such projects allow students to address real-world challenges faced by food industry companies and propose practical solutions to improve performance, product quality, or process efficiency.

The project may be carried out within the university or in collaboration with an agri-food company or research institution (optional). This flexibility allows students to align their project with their professional goals and strengthens the link between academic training and industry practices.

At the end of the project, students are required to submit a written scientific thesis and present their work during an oral defense in front of a jury composed of faculty members and field experts. The evaluation focuses on the quality of the work, scientific rigor, subject mastery, and the ability to clearly analyze, discuss, and present results.

004AAATM2	Food Additives and Processing Aids	2 Cr.
------------------	---	--------------

The aim of this course is to provide students with an in-depth understanding of the role of food additives and processing aids in the formulation of modern foods, enabling them to control and optimize all desired quality attributes of food products.

This course enables students to develop the following learning outcomes:

- C2. Innovate and conduct research in the food sector.
- C3. Implement and maintain quality control within food production units.
- C5. Design marketing strategies for food products.

004MAENM1	Food Consumer Behavior + Practical Work	2 Cr.
------------------	--	--------------

This course aims to analyze eating behavior from an integrated perspective, taking into account the interactions among biological, psychological, social, cultural, economic, and environmental factors.

It enables students to understand how individual characteristics, life stages, the food environment, media, consumption trends, and educational interventions influence food choices.

The course therefore develops a critical understanding of individuals and their eating behavior within their environment, while highlighting the role of food technology professionals in behavioral analysis, communication, education, and the adaptation of the food supply to contemporary realities.

004GEEAM4	Food Geopolitics	1 Cr.
------------------	-------------------------	--------------

This course examines the geopolitical challenges related to food and water through an interdisciplinary approach. It analyzes the political, economic, and environmental dynamics that influence global food security and water resource management.

The course aims to develop an understanding of the fundamental concepts of geopolitics and to assess the impact of national and international policies on food production and consumption, drawing on the most recent FAO data. Particular attention is given to geopolitical transformations over the past three decades, especially in Asian countries such as China and India.

In addition, the course explores conflicts and cooperation among states regarding access to water resources (rivers and transboundary basins), with a focus on regions in the Middle East and Africa. Case studies include the disputes over the Nile waters and the Euphrates River. The course also addresses key challenges related to sustainability, public health, and the climate crisis in the context of food and water systems.

004FLARM2	Food Laws and Regulations	2 Cr.
------------------	----------------------------------	--------------

This course covers the importance and development of food legislation, food standards, codes of practice and specifications (Codex Alimentarius), formulation of legal food standards (national and international) as well as labeling requirements. It also teaches students how to interpret the content of regulations and use them to support the professional needs in the food industry.



004EMBAM1	Food Packaging	2 Cr.
------------------	-----------------------	--------------

This course aims to develop an in-depth understanding of the strategic role of packaging in modern food systems. The course covers the main packaging materials and technologies (glass, metals, plastics, and cellulosic materials), with a focus on their functional properties, their interactions with food, and their impact on product quality, safety, and shelf life. Particular attention is given to food–packaging interactions (migration, sorption) as well as to the regulatory requirements governing packaging.

Beyond technical aspects, the course also addresses environmental and societal dimensions by examining issues related to sustainability, recycling, food waste reduction, and evolving consumer expectations. The course further explores innovations in packaging, including active and intelligent packaging, biodegradable materials, and antimicrobial systems, as well as their role in product communication (labeling, claims, and consumer perception). Through a combination of theoretical instruction, case studies, flipped classroom activities, and simulations, students are encouraged to adopt an integrated approach, enabling them to design and evaluate packaging solutions that meet the technical, economic, regulatory, and environmental constraints of the agri-food sector.

004PAELM1	Food Packaging Project	1 Cr.
------------------	-------------------------------	--------------

This course extends the Food Packaging module and engages students in applied design and innovation through an integrative project. Students will select a food product from the Lebanese market, critically evaluate its current packaging, and develop an improved, innovative solution aiming at:

- Improved protection of the product
- Reduced food loss and waste
- Extended shelf life

Students will apply knowledge in food technology, materials science, market and consumer analysis, and sustainability to deliver a solution that is technically feasible, economically viable, and locally relevant. Emphasis is placed on:

- Critical analysis of existing packaging
- Alignment with Lebanese market needs and trends
- Regulatory, industrial, and environmental constraints
- Valorization of local and traditional products

The course follows a project-based, problem–solution approach with iterative feedback, fostering innovation, research skills, project management, and professional communication. Optional participation in the Arab Starpack (Save the Food) competition is encouraged.

004HYGAM2	Food Safety and Hygiene	2 Cr.
------------------	--------------------------------	--------------

This course aims to develop students' understanding and application of a food safety approach, based on knowledge and techniques related to microbiological safety and food preservation. This includes the study of beneficial, spoilage, and pathogenic microflora, particularly in food products; the identification of food-related hazards and their prevention; the control of food hygiene in accordance with legal requirements; the training and awareness of personnel handling food; various cleaning and disinfection operations; unit operations; as well as quality assurance systems and certification schemes.

This course enables students to develop the following learning outcomes:

- C2. Innovate and conduct research in the food sector.
- C3. Implement and maintain quality control within food production units.
- C4. Develop and promote sustainable practices within a food company.

004STALM3	Food Technology Internship	24 Cr.
------------------	-----------------------------------	---------------

The final-year internship, with a total duration of six months, is an essential immersive professional experience within the Master's program in Food Technology. It enables students to apply their academic knowledge in a real-world environment and to develop operational skills aligned with the requirements of the agri-food sector.

Students are encouraged to orient their internship according to their career goals by selecting one or more areas of activity such as production, quality control, research and development (R&D), regulatory affairs, marketing, or procurement. This approach promotes progressive specialization and better alignment with their professional aspirations. The internship may be carried out:

- Within a single company, with the possibility of rotation across multiple departments;
- Across different companies, taking into account the Lebanese professional context and allowing students to explore diverse field realities.



This flexibility provides students with a comprehensive and diversified understanding of the agri-food sector while enhancing their adaptability and employability.

The internship is a professional placement, requiring full integration into the host organization. As such, students must comply with the company's internal regulations (working hours, organizational structure, professional conduct, confidentiality, etc.) and actively engage in the tasks assigned to them. Supervision is jointly ensured by an academic advisor and a professional mentor, guaranteeing both pedagogical and operational guidance.

This course contributes to the development of the following learning outcomes:

- C1. Manage a food production unit while addressing production, supply, and distribution challenges.
- C2. Innovate and conduct research in the food sector.
- C3. Implement and maintain quality control within food production units.
- C4. Develop and promote sustainable practices within a food company.
- C5. Design marketing strategies for food products.

004PRJTM2	Food Technology Project 1	2 Cr.
------------------	----------------------------------	--------------

This course involves a practical, applied study addressing a specific issue in the food technology field. It aims to develop students' ability to analyze real-world situations and propose solutions adapted to technical, organizational, and economic constraints in the food industry.

Students will explore concrete topics such as food processing, product quality, ingredient use, innovation, or industrial practices through research, data collection, and critical analysis. The project introduces basic project methodology and reflects real industry challenges.

The work concludes with the presentation of results as a scientific e-poster, developing skills in analysis, synthesis, and scientific communication.

Upon completion of this course, students will be able to:

- C2. Innovate and conduct research in the food sector.
- C3. Implement and maintain quality control within food production units.
- C4. Develop and promote sustainable practices within a food company.
- C5. Design marketing strategies for food products.

004PRTEM3	Food Technology Project 2	2 Cr.
------------------	----------------------------------	--------------

This project is an advanced study and analytical work focused on a specific issue within the field of food technology. This course builds on the foundations established in "Food Technology 1" and aims to develop a more in-depth scientific and technical approach applied to the agri-food sector.

The work involves extensive literature research, critical analysis of available data, and, where relevant, the implementation of experimental studies or detailed analyses.

This project may be carried out independently or in connection with the final year project. In some cases, it serves as a preparatory phase for the thesis, helping to refine the research question, test methodologies, or conduct preliminary analyses. Alternatively, it may focus on a different topic chosen to deepen knowledge in a specific area of food technology.

The project concludes with the production of two complementary outputs:

- A written report presenting the research problem, methodology, results, and their analysis;
- A scientific e-poster, summarizing and visually presenting the key findings of the study.

These deliverables assess the student's ability to structure scientific work, synthesize information, and effectively communicate results.

Upon completion of this course, students will be able to:

- C2. Innovate and conduct research in the food sector.
- C3. Implement and maintain quality control within food production units.
- C4. Develop and promote sustainable practices within a food company.
- C5. Design marketing strategies for food products.

004STEAM1	Food Technology Seminar 1	2 Cr.
------------------	----------------------------------	--------------

This course consists of an individual research project based on a bibliographic review and synthesis, carried out by the student and shared with all Master's students through an oral presentation at the end of the semester.





The objective of the seminar is to strengthen students' skills in literature research and critical synthesis (based on recently published scientific studies in peer-reviewed journals), as well as to develop their oral communication abilities.

This course enables students to develop the following learning outcome:

C2. Innovate and conduct research in the food sector.

004TOALM2	Food Toxicology	3 Cr.
------------------	------------------------	--------------

This course introduces the main food contaminants, their sources, and their effects on human health, within a framework that integrates nutrition, food safety, and public health.

The course covers the different categories of contaminants (natural, environmental, and technological), their routes of exposure, and their fate in the body (toxicokinetics and toxicodynamics). It also addresses the principles of toxicological risk assessment, the interpretation of exposure data, and regulatory frameworks.

The objective is to enable students to understand situations of dietary exposure and to assess their implications for health.

004MIAIM2	Industrial Food Microbiology + Practical Work	2 Cr.
------------------	--	--------------

This course highlights the role of microbiology as a technological tool in the food industry. The functions of microorganisms as both agents of transformation and agents of spoilage in food matrices are examined. The conditions and methods used to monitor microbial growth (e.g., fermentation processes, shelf life of foods) and microbial reduction (e.g., effectiveness of decontamination procedures) are discussed in detail.

Upon completion of this course, students will be able to apply microbiology as a tool for ensuring the sanitary quality of food products, as well as for optimizing food processing operations. This course contributes to the development of the following learning outcomes:

C2. Innovate and conduct research in the food sector.

C3. Implement and maintain quality control within food production units.

C5. Design marketing strategies for food products.

004INCOM4	Introduction to Accounting	2 Cr.
------------------	-----------------------------------	--------------

This course covers cost classifications (direct/indirect, fixed/variable, product/period), components of production costs, cost accumulation, and costing systems such as job-order costing, along with cost behavior analysis. Through practical exercises and case studies, students will learn to identify relevant costs, analyze managerial issues, and support decision-making within organizational constraints. The course emphasizes the ability to interpret internal financial data and effectively support managerial decisions.

004IPEXM4	Introduction to the Design of Experiments	1 Cr.
------------------	--	--------------

This course introduces the principles and applications of Design of Experiments (DoE) within the context of Food Technology. Students will learn to develop experimental designs, analyze data, and apply statistical methods to optimize food processes and products. Emphasis is placed on practical applications using statistical software tools.

004APPIM2	ISO Standards Implementation	2 Cr.
------------------	-------------------------------------	--------------

The aim of the course is to provide practical knowledge on the implementation of quality control systems, food safety management, and the competence of food analysis laboratories. This course contributes to the development of the following learning outcomes:

C2. Innovate and conduct research in the food sector.

C3. Implement and maintain quality control within food production units.

C4. Develop and promote sustainable practices within a food company.

C5. Design marketing strategies for food products.



004MARKM2	Marketing in the Food Sector + Practical Work	3 Cr.
------------------	--	--------------

This course aims to deepen students' strategic and operational understanding of marketing, building on the foundations acquired during their undergraduate studies. It seeks to strengthen students' analytical thinking in marketing and their ability to develop concrete recommendations at each stage of a project. The teaching approach is based on real-world case studies and places particular emphasis on the nutrition and agri-food sectors, while also remaining open to other fields of application.

004TEAMM4	Mineral Water Technology	1 Cr.
------------------	---------------------------------	--------------

The objective of this course is to provide essential information on the following topics:

- The different types of water and sources that comply with Lebanese and international standards.
- The technological treatment of water addressing various physical, chemical, and microbiological contaminants.
- The bottled water control process, from raw materials to finished products.

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

This course aims to provide students with the necessary knowledge related to the technology of non-alcoholic beverages in a broad sense, including production, processing, and preservation techniques.

This course enables students to develop the following learning outcomes:

- C1. Manage a food production unit while addressing production, supply, and distribution challenges
- C3. Implement and maintain quality control within food production units.
- C4. Develop and promote sustainable practices within a food company.
- C5. Design marketing strategies for food products.

004TPOLM1	Olive Oil Technology	1 Cr.
------------------	-----------------------------	--------------

This course begins with a general introduction to vegetable oils, highlighting their nutritional and economic importance as well as their role in human diet. It also covers their chemical composition, particularly their richness in fatty acids, bioactive minor compounds, and antioxidant substances. A detailed description of extraction methods and refining processes for vegetable oils is provided, using canola oil as a case study to establish a foundational understanding of the technologies involved in the production of various edible oils.

In the second part, the course focuses on olive oil as a natural product widely recognized for its health benefits, due to its high content of monounsaturated fatty acids and phenolic compounds with significant antioxidant properties. It also aims to familiarize students with olive cultivation practices and the technological processes used to produce high-quality olive oil that meets consumer expectations.

The course further offers a comparative analysis of different olive oil extraction technologies, emphasizing their impact on both extraction yield and the quality characteristics of the oil obtained. Finally, given that by-products from olive mills represent a potential source of water pollution, the course examines their composition as well as the various treatment and valorization methods associated with each extraction technology.

004PCMDM1	Physico-chemistry of Dispersed Systems	2 Cr.
------------------	---	--------------

This course aims to provide students with the conceptual tools required to understand the chemistry of surfactants and food emulsifiers, as well as the formulation and characterization of dispersed systems such as liquid/gas systems (foams) and liquid/liquid systems (microemulsions and emulsions).

The course covers the physicochemical properties, reactivity, preservation, and stabilization of dispersed food systems. Various multi-phase food products are studied, including milk, sauces, butter, ice cream, dairy foams, and related systems.

004GEQAM2	Quality Management	2 Cr.
------------------	---------------------------	--------------

This course aims to equip students with the knowledge and skills required to understand and master the principles, tools, and methods used to ensure and improve the quality of products or services within an organization.

It covers key concepts of quality management, including standards and certifications such as ISO 9001, as well as problem analysis and resolution tools. The course also introduces continuous improvement approaches.

Through this course, students will develop practical competencies to analyze processes, identify the root causes of non-conformities, and propose effective solutions in order to optimize organizational performance and enhance customer satisfaction.

004SRNTM1	Research Seminar	1 Cr.
------------------	-------------------------	--------------

This course consists of an individual seminar based on literature research and synthesis of recent scientific studies published in academic journals. Students will conduct independent research, synthesize their findings, and present their work orally to Master's students at the end of the semester. The course develops skills in literature research, scientific synthesis, and oral communication. It is a required component of the Internship Certificate, the Master's programs in Nutrition (Human Nutrition or Sports Nutrition and Physiology), and the Master's program in Food Technology.

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

This course aims to provide both fundamental and applied knowledge related to the sensory properties of food, as well as the sensory evaluation methods used in the agri-food sector.

The objective of this course is to train students in identifying, analyzing, and solving sensory-related issues typically encountered in the food industry, using a rigorous scientific and practical approach. Tutorials and practical sessions complement the theoretical instruction by strengthening students' ability to apply sensory analysis tools and methodologies in real-world situations.

By the end of this course, students will be able to:

- C2. Innovate and conduct research in the food sector.
- C3. Implement and maintain quality control within food production units.
- C5. Design marketing strategies for food products.

004SPTAM2	Special Topics in Food Technology	1 Cr.
------------------	--	--------------

This course aims to develop a deep and critical understanding of current and future challenges facing food systems at both local and international levels.

It covers key themes such as food security, crises in the agri-food sector, evolving consumption trends, and the challenges associated with feeding future populations. Particular attention is given to the Lebanese context, exploring both opportunities and constraints related to entrepreneurship in the agri-food sector. The originality of this course lies in the integration of testimonials from industry professionals and entrepreneurs, enabling students to gain a concrete, realistic, and critical perspective on the challenges encountered in practice (economic, regulatory, organizational constraints, etc.).

Through discussions, debates, and an applied project, students are encouraged to analyze complex issues, confront theoretical knowledge with real-world situations, and develop structured thinking regarding strategic challenges in the agri-food sector. This course also aims to foster an entrepreneurial mindset and decision-making skills in uncertain environments.

This course contributes to the development of the following learning outcomes:

- C1. Manage a food production unit while addressing production, supply, and distribution challenges
- C4. Develop and promote sustainable practices within a food company.
- C5. Design marketing strategies for food products.

004LOINM1	Supply Chain Management + Practical Work	3 Cr.
------------------	---	--------------

This course provides a comprehensive introduction to industrial supply chain and production systems management in the agri-food sector. It covers physical, informational, and decision-making flows across the supply chain, from raw materials to finished products.

Key topics include demand forecasting, production planning, scheduling, inventory management, and performance monitoring. The course also introduces modern tools for process optimization, project management, and continuous improvement.

Students will develop skills to analyze and optimize logistics and production systems while considering cost, quality, time, and sustainability constraints. Learning activities include lectures, case studies, and practical applications.

004OPUNM1	Unit Operations	3 Cr.
------------------	------------------------	--------------

This course aims to develop an in-depth understanding of unit operations and process engineering principles applied to the food industry.



The course enables students to acquire the scientific and technological foundations required for the transformation of matter and energy, integrating heat and mass transfer phenomena as well as the physical, chemical, and biological mechanisms involved in industrial processes.

Teaching activities combine lectures, problem-solving sessions, case studies, and process analyses, allowing students to develop analytical and operational skills applicable to both industrial and research contexts. This course contributes to the development of the following learning outcomes:

- C1. Manage a food production unit while addressing production, supply, and distribution challenges
- C2. Innovate and conduct research in the food sector.
- C3. Implement and maintain quality control within food production units.

004VABIM2	Valorization of Food Processing By-products	2 Cr.
------------------	--	--------------

The objective of this course is to provide the necessary tools to develop clean and safe processes adapted to the treatment and valorization of by-products generated from food processing. Beyond technical skills, this course will also provide students with a broad understanding of the most innovative advances in the environmental sector, particularly with respect to the principles of sustainable development.

This course enables students to develop the following skills:

- C2. Innovate and conduct research in the food sector.
- C3. Implement and maintain quality control within food production units.
- C4. Develop and promote sustainable practices within a food company.
- C5. Design marketing strategies for food products.

004INSAM2	Veterinary Inspection	1 Cr.
------------------	------------------------------	--------------

This course examines food safety control systems for foods of animal origin throughout the entire “farm-to-fork” chain, emphasizing the roles of government authorities, farmers, veterinarians, industry professionals, processors, and consumers. It also covers livestock production, including animal husbandry, nutrition, and welfare during transport and up to slaughter. Students will study ante-mortem and post-mortem inspection procedures and the analytical methods used to ensure meat safety and quality.

