School	Arts and Sciences
Major	Bachelor of Food Technology

Course Descriptions

Code	Title	Description
FDSC300	Technology of Food Products	This course introduces the scientific and engineering principles underlying the production, processing, preservation, packaging, and development of food products from raw materials to finished products. It covers traditional fermentation, enzyme technology, and modern biotechnology, as well as food engineering principles related to fluid flow, heat transfer, mass balances, unit operations, storage, handling, and sanitation. The course also addresses food packaging systems, product development and sensory evaluation, chemical hazards and regulatory toxicology, and major food preservation technologies. Physical, chemical, and engineering principles governing food processing and product stability are examined to support the production of safe, high-quality food products.
FDSC300L	Technology of Food Products Lab	This laboratory course introduces students to practical food technology through laboratory analysis and exposure to industrial food-processing equipment and instrumentation. Students develop practical skills in food sampling, sensory evaluation, proximate analysis, chromatography, and analytical data evaluation, while learning the principles and applications of processing equipment and machines commonly used in food manufacturing plants. The course also covers heat transfer techniques and food deterioration, with emphasis on safe and proper equipment operation, standardized laboratory procedures, and accurate analysis and reporting of results.
FDSC355	Food Microbiology II	This course examines the microorganisms that contaminate, spoil, and persist in foods, and the principles by which foods are protected from them. It begins with the intrinsic and extrinsic factors that govern microbial growth in food systems, then studies the microbiota and spoilage of fresh meat and poultry, fruits and vegetables, and milk and fermented dairy products. The course then covers food protection by chemicals and biochemicals, modified atmospheres, low temperature, high temperature, and drying, emphasizing their modes of action, their effects on food microbiota, and their implications for food safety and storage stability.
FDSC355L	Food Microbiology II Lab	This laboratory course provides practical experience in microbiological techniques used to assess food safety, quality, and preservation. Students investigate the effects of environmental factors on microbial growth and evaluate the effectiveness of selected food preservation methods. Emphasis is placed on quantitative microbiological analysis, including total plate counts, surface contamination testing, and the enumeration of indicator microorganisms. Students also examine microorganisms naturally present in or contaminating various food products and water samples and interpret laboratory results in relation to food hygiene, safety, and quality.
FDSC360	Crop Production Attributes to Quality	This course examines the biology and technology of the postharvest life of horticultural crops. Students study how pre-harvest factors influence postharvest quality, how crop maturity is assessed, and how harvesting, handling, precooling, and packaging methods preserve quality. The course then covers postharvest treatments, storage systems, disease control, postharvest safety, and the conditions and ethylene management used to control fruit ripening. Emphasis is placed on selecting and justifying appropriate practices to maintain crop quality and extend storage life.
FDSC365	Animal Production Attributes to Quality	This course examines the major factors influencing the quality, safety, and acceptability of foods of animal origin, including meat, poultry, fish, milk, and eggs. Emphasis is placed on the effects of animal nutrition, genetics, farm management practices, and animal welfare on the physicochemical, nutritional, sensory, and microbiological characteristics of animal products. The course also explores the influence of preslaughter and slaughter conditions, handling, and storage practices on product quality, safety, and yield. Students will develop an understanding of quality assessment criteria, identify common defects in animal products, and examine appropriate preventive and control measures to maintain product quality throughout the animal production chain.
FDSC370	Food Chemistry	This course is concerned with biological materials which are subjected to a wide range of environmental conditions which may affect the chemistry of these materials. In this course the chemistry of the major and minor components of foods would be explained with a brief description of vitamins, minerals, Vitamins and flavor. In addition to that the relationship between the chemistry of food components and their functional properties in food systems would be described.

FDSC400	Herbs and Spices	This course examines the scientific, technological, and culinary importance of herbs and spices. It covers their origins and culinary traditions, cultivation, harvesting, processing, and the chemistry of taste, aroma, and flavor development. Emphasis is placed on botanical identification, phytochemical composition, quality and safety attributes, sensory evaluation, preservation, and the functional roles of selected herbs, spices, and spice blends in food products. Students also explore their culinary applications, industrial uses, and contribution to food quality, consumer acceptance, and product development.
FDSC415	Dairy Technology	This course explores the fundamental principles and technologies involved in industrial dairy manufacturing. Students will examine the physical, chemical, and microbiological properties of raw milk across species, along with raw milk reception, quality testing, and handling procedures. The curriculum covers core unit operations—including pasteurization and thermal processing, centrifugal separation, homogenization, membrane filtration, evaporation, and deaeration—as well as the biochemical mechanisms and production principles of converted dairy products such as cheese and fermented milk products.
FDSC420	Food Processing	This course introduces major categories of food processing, including bakery, non-alcoholic beverages, dairy products, oils and fats, chocolate, and vegetable products. It examines the composition and functional roles of raw materials and ingredients, the principles and major unit operations used in processing, and the physical, chemical, and microbiological changes that occur during manufacture. Emphasis is placed on process flow, product quality, safety, nutritional value, shelf life, sensory characteristics, and the relationship between raw-material quality, processing conditions, and finished-product attributes.
FDSC425L	Food Processing Lab	This laboratory course provides students with practical experience in common food-processing and preservation operations. Through supervised laboratory activities, students prepare and process selected food products, control relevant operating conditions, collect and interpret observations and data, and evaluate product quality and safety. The course integrates raw-material preparation, formulation and processing variables with physical and sensory quality attributes, and includes an individual food-product development project that requires students to select an appropriate processing or preservation method, evaluate the resulting product, and communicate the development process and outcome.
FDSC430	Traditional Foods	This course provides students with practical experience in the processing and preservation of traditional Lebanese Mooneh products. It covers raw-material selection, preparation and production methods, preservation techniques, process-control parameters, food safety, quality evaluation, packaging, storage, and shelf-life considerations. Through laboratory activities, students apply scientific and technological principles to produce selected Mooneh products and develop an innovative product that preserves Lebanese culinary heritage while responding to contemporary consumer and market needs.
FDSC435	Food Toxicants and Additives	This course examines chemical hazards, toxicology principles, and ingredient safety across the food supply chain. Students study dose–response relationships, toxicant absorption and elimination, and standard analytical detection methods. Topics cover natural toxins in plants, land animals, seafood, and fungi, pesticide residues, and process-induced contaminants such as acrylamide and nitrosamines. The course also evaluates the technological roles, safety assessments, and regulatory limits for major food additives, including preservatives, antioxidants, sweeteners, and colors.
FDSC445	Food Quality management and HACCP	This course provides an integrated approach to food safety and quality management, with emphasis on the prevention and control of biological, chemical, and physical hazards throughout the food chain. It introduces the principles and evolution of HACCP and prerequisite programs (PRPs), including operational prerequisite programs (OPRPs), and examines their role in establishing effective food safety management systems. Students explore product formulation and process controls, sanitation and hygiene practices, and methods for assessing and controlling food safety risks. The course emphasizes the development, implementation, verification, and documentation of HACCP plans according to the Codex approach, with an introduction to internationally recognized systems such as BRC and ISO 22000. Case studies and practical exercises are used to analyze food safety failures and develop appropriate preventive and corrective measures.

FDSC450	Cooking Essentials	This course introduces the fundamental scientific principles and practical skills involved in food preparation and cooking. It covers food safety and sanitation, kitchen organization, proper equipment use, standardized recipes, measurement and conversion, knife skills, mise en place, flavor development, heat transfer, and major cooking methods. Students apply these principles to the preparation of foods from various groups, including plant- and animal-based foods, stocks, sauces, soups, salads, and basic baked products. Laboratory activities emphasize the relationship between culinary practices, food science, nutrition, sensory quality, portion control, sustainability, food-waste reduction, teamwork, and professional conduct.
FDSC455	Meat, Fish and Poultry Technology	This course covers the science and technology of processing meat and meat products. It begins with the composition, quality, selection, and grading of raw meat, then introduces the principles, equipment, and standard practices of meat processing and the functional roles of non-meat ingredients and seasonings. Students then study heat treatment, the main categories of processed meat products, including fresh processed products and dried meat, and the technological and formulation requirements needed to achieve desired product characteristics. The course concludes with hygiene in meat processing plants, prerequisite programs, HACCP, and cleaning and sanitation.
FDSC460	Food Service Management	This course introduces students to the management of different types of foodservice organizations. It covers key managerial and operational aspects, including organizational structure, purchasing, receiving, storage, inventory management, food production, delivery, and service. The course also addresses quality-related considerations, including food safety, sanitation, hygiene, menu planning, and cost control.
FDSC470	Food Laws and Standards	This course examines food laws, regulatory frameworks, and compliance requirements in Lebanon, the United States, the European Union, and Gulf Cooperation Council markets, with particular emphasis on the United Arab Emirates and Saudi Arabia. Topics include regulatory authorities and enforcement, food safety, labeling, product registration, import and export requirements, and international food trade. The course also covers major food safety management and certification systems, including ISO 22000, FSSC 22000, and Halal certification, while distinguishing regulatory obligations from voluntary standards. Through a comparative approach, students evaluate similarities and differences across markets and apply relevant requirements to a selected food product by preparing and presenting a comparative compliance analysis.
FDSC475	Food Engineering	This course focuses on the engineering calculations and physical principles used in food manufacturing. Students learn to apply unit operations, material and energy balances, and thermodynamic concepts to food processes. Major topics include fluid flow behavior and piping systems (viscosity, pressure drops, and pump power requirements) as well as heat transfer mechanisms (conduction, convection, radiation) and thermal properties of foods during heating and cooling operations.
FDSC490	Modern Topics In Food Science	This course is concerned with biological materials which are subjected to a wide range of environmental conditions which may affect the chemistry of these materials. In this course the chemistry of the major and minor components of foods would be explained with a brief description of vitamins, minerals, Vitamins and flavor. In addition to that the relationship between the chemistry of food components and their functional properties in food systems would be described.
FDSC498	Supervised Training in Food Industries	This course is a supervised industrial training experience in a food-industry establishment. Students observe the processing lines, unit operations, and plant layout of the training facility, apply food safety, hygiene, and sanitation practices in the workplace, and perform assigned technical tasks according to established procedures. Students document their training activities, technical observations, and workplace responsibilities in weekly activity structured training report that includes critical reflection. Performance is evaluated by the training facility, by the training instructor, and through the student report.