UNDERGRADUATE COURSE DESCRIPTIONS

36386 Food Preservation 3 Cr.
Principles of food spoilage & poisoning. Food preservation by drying, freezing, pasteurization, sterilization, fermentation, evaporation, irradiation and food additives, biopreservation, food packaging systems.

36382 Cereal Technology 4 Cr.
Chemical and Physical properties of cereal grains, wheat storage; Starch modification and hydrolysis, Dry milling of wheat, corn and rice; Wet milling of wheat and corn, Chemical and biological leavening; Technology of cakes, biscuits, pasta and breakfast cereal.

36288 Food Quality Control 2 Cr.
Organization of a quality control department, Hazard analysis critical control point (HACCP) sampling, Control charts; Introduction to ISO 9000 series.

36340 Human Nutrition 4 Cr.
Carbohydrate, fat and protein digestion and absorption vitamins; minerals and their functions in human; Nutrition in pregnancy and lactation, Nutrition during infancy and childhood Recommended dietary allowances.

36348 Principles of Food Engineering I 3 Cr.
Engineering dimensions and units. The first and second law of thermodynamics. Tables of saturated and superheat steam. Mass and energy balance. Fluid flow and fluid handling. Heat transfer.

36352 Principles of Food Engineering II 3 Cr.
Psychometric chart. Evaporators and drying equipment. Cooling and freezing.

36389 Food Industries Hygiene and Safety 2 Cr.
Microorganisms and their relationship to sanitation. Food contamination sources; Personal hygiene and sanitary food handling; Cleaning compounds for effective sanitation, Safety measures in food industry.

36386 Fundamentals of Food Plant Design 3 Cr.
Location and building of food factories; Equipment and facilities of water; electricity, steam and illumination of food factories. Material handling in food processing; Food plant map and layout, Flow diagram and flowchart of food processing. A project for establishment of food processing plant.

36489 Food Refrigeration and Storage 2 Cr.
Chilling and freezing of foods; Building facilities and equipment of cold storage; Post harvest technology and physiology of food products; Optimum condition for cold storage of fruits and vegetables. Theory of freezing, effects of freezing on food products; Freezing equipments. Thawing of frozen foods; Structural building and equipment for grain storage. Cleaning and fumigation of grain storage.

36354 Dairy Science and Technology (I) 3 Cr.
History and definitions. Mechanism of milk production and secretion. Physical, chemical and microbiological properties of milk and dairy products.

36356 Dairy Science and Technology (II) 3Cr.
Milk and dairy plant operations. Processing and manufacturing of milk and dairy products. Sanitation and CIP in dairy plant.

36384 Food Canning 3 Cr.
History, location and building of canneries water and steam in canning plants. Canning operations and equipment. Raw product specifications. Spoilage and poisoning of canned foods, canned food standards and specifications. Thermal process calculations.

36485 Principles of Food dehydration 2 Cr.
History and development, Water activity and absorption isotherms in dehydrated foods; Dehydration rate parameters, Psychometric charts and equipment sun drying of fruits and vegetables processing and, manufacturing of dehydrated fruits, vegetable, meat and dairy products.

36387 Beet-Sugar Technology 4 Cr.
History and fundamentals; Physico-chemistry of the beet tare laboratory; Beet delivery, storage, flaming and washing; Beet slicing, extraction, juice purification; Clarification & filtration, Ion-exchange and evaporation. Crystallization and separation of crystals and syrups, granulated sugar packaging, Lime and carbon dioxide productions, Stiffen process; Pulp drying; Boiler and electrical power system waste water regulations; Process control.

36381 Edible Oil Science and Technology 3 Cr.
Structure and composition of fats and oils; Classification of fats and oils. Handling and storage; extraction; Preparation of animal fat; Rendering of animal fat; Preparation of oil seeds; Mechanical expression of oil, Solvent extraction; Refining methods; Preparation of Commercial lecithin. Bleaching, deodorization, hydrogenation, esterification, fractionation and winterization, processed cooking and salad oils; Shortenings; Packaging of fats and oils; Analytical methods.

36388 Analytical Chemistry 4 Cr.
Theoretical aspects of analytical chemistry; acid/base, redox, precipitation and complexometric titrations; Principles of instrumental analysis; Optical spectroscopy; Flame photometry; Atomic absorption, Polarographic and chromatographic methods.

36287 Food Analysis 3 Cr.
Food sampling and preparation. Chemical analysis of food components; gravimetric, volumetric, complexometric and acidimetric methods. Principles and methodology of refractometry, densimetry, polarimetry, spectrophotometry and chromatography.

36286 Food Chemistry 4 Cr.
Chemical and physical properties of food components; water, carbohydrates, proteins, lipids, vitamins, minerals, enzymes, food pigments and colorants, flavors and food additives. Browning, auto-oxidation and other related reactions in foods.

36484 Fermentation Technology 2 Cr.
Definition and history of fermentation, types of substrates, biochemical cycles in fermentation processes; Microorganisms used in fermentation processes; by-products of fermentation processes (alcohol, acetic acid, citric acid, amino acid, ...); Genetic engineering of industrials microorganisms.

36151 General Microbiology 3 Cr.
Classification, morphology, Fine structure and growth of microorganisms. Physical and chemical properties of environment effective on microbial growth. Genetic; mutation, metabolism and pathogenesis of microorganisms; Microbial control (chemical and physical agents) Relationship between microbial cell and its ecosystem including human body.

36289 Food Microbiology 4 Cr.
Chemical and physical properties of foods. Types of microorganisms present in foods (bacteria, yeast, mold); Role and significance of microorganisms present in foods (food spoilage, food poisoning, food production); Methods for identification and enumeration of microorganisms in foods (chemical, physical, immunological and biological); Methods for food preservation (Chemical, Physical, Fermentation) .

36482 Meat and Seafoods Processing 4 Cr.
Meat and meat products composition. Biochemistry and quality of meat. Processing technology of meat products. Food additives in meat products. Fish composition, Fish processing technology (freezing, smoking, canning, etc). Processing of Iranian Caviar.

36280 Principles of Food Processing and Preservation 3 Cr.
Food science and technology definition and application. Food composition (water, carbohydrate, protein, minerals, etc). Food spoilage. Food preservation methods (freezing, cold storage, concentration, drying and canning). Preservation and processing of meat and milk products.