

Course Description for Bachelor Degree in Nutrition and Food Processing

30202101 Calculus 1 3(3-0)

Functions, limits, derivatives, techniques of differentiation, continuous time phenomena, applications of the derivative, integral, techniques of integration, first order differential equations, the Solution of autonomous equations, discrete time dynamic systems, real world applications: model of gas exchange, modeling the heart's electrical system, and model for neuron firing.

30206101 General Chemistry 1 3(3-0)

Basic concepts: matter, units of measurements, uncertainty in measurements. Stoichiometry equations, atomic and molecular weights, moles, chemical calculations, Reactions in solution and their calculations, Structure of the atom periodic properties of the elements, Chemical bonding, and Molecular geometry.

30206102 General Chemistry Lab 1 1(0-3)

Basic concepts, atomic theory and periodic table. Chemical bonding and molecular structure. Chemical reactions in solutions, oxidation-reduction reactions, ideal gases, states of matter and intermolecular forces. Physical properties of solutions and colloids. Chemical equilibrium, solubility, molecular structure, types of chemical reactions. Thermodynamics principles and kinetics. Organic chemistry.

Co-req. 30206101

30206103 General Chemistry 2 3(3-0)

Solutions: concentration units and colligative properties, Chemical kinetics: rates, order, order of reactions, half-lives. Chemical Equilibrium Acid-base Equilibrium: Strong and weak acids and bases, salts solutions common ion effect and buffers. Thermo-chemistry and thermodynamics: Laws of thermodynamics, enthalpy, entropy and Gibbs free energy.

Pre- requisite: 30206101

30206104 General Chemistry Lab 2 1(0-3)

Molar mass of a volatile liquid and a solid from freezing point depression, Calorimetry, Thermo chemistry and Hess's law, Studies on some factors affecting chemical reaction, Le Chatelier's principle, Equilibrium constant of a chemical reaction using visible spectrophotometer. Oxidation-reduction reactions, Galvanic cells, Electrolytic cells, Faradays laws, Molar solubility and common ion effect.

Co- requisite: 30206103

30203101 General Biology 1 (3-0)

Water (importance for environment and living organism), Macromolecules (structure and function). Structure and function of prokaryote and eukaryotes, cell division (mitosis meiosis). Molecular genetics and DNA technology, genetics of virus and bacteria, respiration, photosynthesis, fungi, plants (structure, growth, reproduction and development).

30203111 General Biology Lab 1(0-3)

Study the cells and laboratory experiments in microscopy, chemical aspects of cells of animals and

plants, anatomy of the cells in living preparations

Co- requisite: 30203101

30403211 Principles of Plant Production 3(3-0)

Principles of growth and development of cultivated species. Methods of propagation. Environmental factors affecting crop production. Culture and use of fruit, vegetable, flower, ornamental, forest and agronomic crops.

Pre req. 30203102

30206241 Analytical Chemistry 3(2-3)

Survey of the methods of inorganic quantitative analysis, including the methods of gravimetric and volumetric analysis with the use of simple instrumental methods included. Laboratory experiences involving the qualitative and quantitative analysis of chemical compounds including gravimetric, volumetric and spectrophotometric methods.

Pre- requisite 30206103

30206322 Biochemistry 3(2-3)

Introduction to the chemistry of life processes, the composition of living matter and the changes associated with biological processes. A laboratory course in which the properties of biochemical molecules are explored and common biochemical reactions are examined.

Pre- requisite 30206221

30402221 General Microbiology 3(2-3)

History and scope of microbiology ; prokaryotes cell structure and function; metabolism and nutrition, microbial growth, requirements for growth , environmental factors affecting growth, effect of antimicrobial agents on growth; microbial genetics, and gene cloning , bacterial reproduction, microbial taxonomy, major groups of bacteria, microorganisms and environment.

Pre req.30203114

NFP211 Principles of Nutritional Sciences 3(3-0)

Introduction to the science of nutrition and its interaction with other sciences. The course addresses the nutrients with respect to classifications, dietary sources, functions and body requirement. The course also addresses the concept of malnutrition, and the study of the basic components of food: carbohydrates, protein, fat, minerals, vitamins and water. In addition to an overview of the diseases resulting from lack of macro- and micro-nutrients.

Pre req. 30203101 +30206103

NFP221 Principles of Food Science 3(3-0)

Introduction to food science and its importance, food crises in the world, nutrients (characteristics sources and its importance), introduction to food processing methods, introduction microorganisms and its importance to food science, factors contribute to spoilage and deterioration of food, food quality, new developments in food science, food status in Jordan.

Pre req. 30203101 +30206103

BNFP212 Human Nutrition 3(3-0)

This course addresses the definition of the science of human nutrition, the criteria of healthful diet and its relationship to public health and chronic diseases, in addition to identifying the role of

social, psychological and economic forces affecting nutrition and food choice. The course also deals with the digestion, absorption and metabolism of macronutrients (carbohydrates, protein and fat) that are necessary for human health. Also, the course addresses dietary guidelines and their development, in addition to the ability to analyze the dietary adequacy of foods.

Pre req. NFP261 + NFP211

NFP321	Food Chemistry	3(3-0)
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Introduction, food composition and physical chemical priorities. Study of water and food systems. Study food components, classification, structure, occurrence and function. Specify and explain changes due to handling, storing, preservation and processing and other natural food components such as enzymes, flavors, colors texture chemistry and a view on additives.

Pre req. 30206322

NFP322	Food Analysis	3(2-3)
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Introduction, definition and importance of food analysis and instrumentation; the basic principles of analytical procedures and techniques commonly used to provide information about the chemical composition, structure, and physicochemical characteristics of food. The principles of food sampling, preparation, analysis, recording and interpreting of results, and experimental errors. Approximate analysis of food components; moisture, ash, lipids, protein, carbohydrates, fiber, vitamins, and minerals. Also, analysis of food additives and contaminants. Modern instrumental techniques in food analysis, including spectroscopy, atomic absorption and emission spectroscopy, ICP-MS, HPLC and GC, ELISA Etc.

Pre req. NFP321

NFP331	Food Microbiology	3(2-3)
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Role and the significance of microorganisms in safety and spoilage of foods. Factors affecting microbial growth curve of microorganisms in foods (intrinsic, extrinsic and implicit factors). Microbial ecology of some selected foods with emphasis on safety and quality, role of microorganisms in food processing.

Pre req. 30402221

NFP332	Food Safety and Hygiene	3(3-0)
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Introduction to the concept of food hygiene and its importance. Food –borne infections and intoxication and the problem of residues in foods. Hygienic requirements in food production and harvesting areas and in food establishments with emphasis on hygienic food handling, processing and storage. Personal hygiene and health requirements, cleaning and disinfecting and pest control as well as the application of hazard analysis critical control point (HACCP) system in food establishments

Pre req. NFP331

NFP322	Food Technology	3(2-3)
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The role of the microbial, chemical and physical corruption factors in food deterioration; the best food preservation and food processing and equipment's used in process such as pasteurization, sterilization, canning, drying, evaporation, cooling and chilling, freezing, radiation, smoking, preservatives...etc.; the new technique in processing such as freeze-drying, freeze-concentration; filling and packaging. The most important application and modification in food science and technology.

Pre req. NFP221

NFP323 Dairy Science and Technology 3(2-3)

Milk composition and nutrition value, chemical, physical microbial and sensory properties of milk. Factors affecting production and composition of milk, microorganisms in milk and dairy (spoilage and its prevention), starter culture technology, milk products (including pasteurized milk, sterilized milk, concentrated milk, evaporated milk, milk powder), cream separation, butter and ghee processing, ice cream and types, fermented dairy products (such as yogurt, Labaneh , Jameed), Cheese processing, other secondary dairy products including whey protein and skim milk powder , It also deals with milk analysis and major milk safety and quality tests.

Pre req. NFP221

NFP311 Nutritional Assessment 3(2-3)

This course discusses the purpose and methods for assessing nutritional status including dietary, biochemical and anthropometric approaches in total health care for individuals and groups. Also, the course addresses the computerized dietary analysis systems, growth charts and nutrition surveys. Laboratory sessions in this course will provide training on applying the principles of nutrition assessment and techniques discussed in this course.

Pre req. NFP212

NFP342 Diet Therapy (1) 3(2-3)

This course addresses the dietetics in health and disease situations, and drug – nutrient interactions. Also, the course discusses the role of dietitian as a member of the health care team. In addition, the course explains the therapeutic diets and nutritional care plan in diseases including pediatric diseases, gastrointestinal diseases, liver diseases, obesity, diabetes mellitus, cardiovascular diseases, renal diseases, surgery, in addition to tube feeding. The course also study the food exchange system and its use in diet planning.

Pre req. NFP311

NFP441 Diet Therapy (2) 3(2-3)

The course study the nutrition care process in different clinical conditions that are less commonly occurring in hospitals, including food allergies and genetic defect diseases, such as lactose intolerance. Also, the course focuses on providing the nutritional care process in stressful situations including cancer, AIDS, burnings, respiratory and rheumatoid diseases, and discusses the drug-nutrient interaction involved in these diseases.

Pre req. NFP342

NFP471 Field Training in Nutrition and Food Processing 6(0-0)

The Student will be under training programmed in the fields of nutrition in Hospitals, food processing and in food industry plants as well as applications of food safety with food control authority. The student should provide a training report for evaluation.

Pre req. 90 Cr .H and the successful completion of NFP342; NFP322; NFP331

NFP472 Seminar in Nutrition and Food Processing 1(1-0)

Training through to collect information on a certain subject in an area of specialization from different sources; presentations and discussions.

Pre req. 90 Cr .H

NFP422 Sensory Evaluation and Developing Food Products 3(3-0)

Introduction to sensory evaluation; physiological aspects of sensory evaluation, sensory characteristics of food products, panelists, and conditions of ideal sensory evaluation environment. Principles of preparation and introduction of samples for sensory evaluation. Classes of food colors, odors, and flavors. Also, the course includes an introduction to food product development. Studying the basics and stages of development of new food products. The functions of different food components, sensory evaluation, and consumer desires in improving the quality of developed food products. Studying the role of improving processing, packaging and marketing strategy in products development. Definition of patents, trademarks, labels, and regulatory issues in products development. Studying a recent famous examples of recently developed food products.

Pre req. NFP322

NFP432 Food Quality Control 3(3-0)

This course will emphasize on fields and concepts of the quality systems of foods. Risk analysis and management of the food chain. Sensory properties of foods and statistical means of quality control. Food standards and regulations. National and international agencies related to food control, application and implementation of food safety management system in food factories, ISO 22000:2005.

Pre req. NFP332

NFP433 Food Biotechnology 3(3-0)

Definition of biotechnology and developments in food biotechnology. Principles of fermentation, genetic engineering, cloning and other modern techniques of biotechnology. Introducing the use of biotechnology in the production of fermented foods, production of enzymes, vitamins and proteins, and treatment of food plants wastes.

Pre req. NFP332

NFP451 Education and community nutrition 3(3-0)

Study the basics of nutrition education and counseling by examining the different food groups and their role in nutritional counseling, nutrition planning and intervention. Also identify the teaching aids for individuals in the case of health and disease. The course also focuses on community nutrition systems and the factors affecting them, community nutrition programs and target groups, methods of community diagnosis, the role of local and international community organizations, food advertising and food policies. The course also includes field visits to some food establishments such as maternity and childhood centers, elderly care centers, and others.

Pre req. NFP342

NFP412 Nutrition Through Life Stages 3(3-0)

This course deals with a detailed view of the nutritional foundations necessary for human growth, development, and health at every stage of human life, including pregnancy, lactation, childhood, adolescence and adults. The course also deals with recommendations and consequences for health and disease for each stage of the life cycle.

Pre req. NFP212

NFP271 Principles of Animal Production 3(3-0)

This course addresses in the, Importance, classes and breeds of farm animals; Animal products meat, milk, eggs); Genetic improvement; anatomy and physiology of reproductive system; Anatomy and physiology of digestive system; nutrients and food resources; chemical composition of feed; management and the important diseases of farm animals.

Pre req. 30203101

NFP422 Food Preparation 3(3-0)

This course include cooking methods and their characteristics, ingredients, composition, nutritional value, and changes during food preparation, especially in the quality of the food product and its causes and how to avoid the negative changes.

Pre req. NFP322

NFP452 Institutional Food Service Management 3(3-0)

The course study the types of food service establishments and their organizational structure, specifications of the productive kitchen and its equipment, personnel management, purchasing, receiving, storing and export of foodstuffs, planning menus and controlling prices and quality.

Pre req. NFP342

NFP453 Fruit & Vegetable Processing 3(2-3)

Chemical composition of fruit and vegetables, ripening process and its accompaniment changes, raw materials in processing, packing and packaging materials for fruit and vegetables and their products, preservation and processing methods of fruit and vegetables including (canning, refrigeration, freezing, pickling, dehydration, concentration, sugar addition, irradiation), Juice and beverages processing, immersing technologies in preservation of fruit and vegetables.

Pre req. NFP221

NFP454 Cereal Science & Technology 3(2-3)

The principal cereal grains and their products, especially wheat with respect to structure, composition and physical and chemical properties and storage conditions. Production of cereal flour, bakery products, pasta, breakfast cereals, as well production of starch and gluten Rice producing types and uses. Practical exercises for evaluating the quality of the different products.

Pre req. NFP221

NFP455 Meat Science & Technology 3(2-3)

Structure and composition of different types of meats; methods of slaughtering and carcass preparation. Post-mortem changes in meats and factors affecting them. Spoilage of meats and methods of prevention. Best preservation practices, including: refrigeration, freezing, vacuum and modified atmosphere packaging. Modern meat processing methods of different meat products and machinery and equipment, such as canning, curing, drying, casing... etc.

Pre req. NFP221

NFP413 Sport nutrition 3(3-0)

This course provides an understanding of the relationship between nutrition and exercise. The course will cover the body's requirements of fluids, macro and micro nutrients during sports, as well as studying the role of carbohydrates, fats, proteins, vitamins and minerals in nourishing the body before, during and after exercise. Also, the course will address some nutritional problems for some athletes. In addition, the course will cover the use of sports supplements and their scientific basis

Pre req. NFP212**NFP456 Principles of Food Engineering 3(3-0)**

Introduction of food engineering including engineering units, system and state of system, density, concentration, moisture, heat, pressure, equations of state, perfect gas law, conservation of mass, material balance, thermodynamics laws, energy balance, power, area, liquid flow in food processing, resources sustainability, heat transfer in food processing, food preservation methods, refrigeration, freezing, evaporation, study of air-water vapor mixture, mass transfer, membrane separation methods, drying, extrusion, packaging, solving problems and practical applications, field trip.

Pre req. NFP221**NFP457 Oil and Fat Science & Technology 3(2-3)**

Sources, composition and properties of edible fats and oils and their effects on the quality of fat-based foods. Technologies of fat processing such as extraction, refining, hydrogenation, winterization, etc., and any of developments in fat and oils. Production of fat products such as margarine, ghee, salad oil, as well as some non-food products based on fat. Standard and Quality control test for the various oil and fat.

Pre req. NFP221**NFP414 Metabolism and energy 3(3-0)**

The course focuses on molecular and cellular mechanisms, through studying the function of tissues and how they communicate with each other. The course also cover different organ systems and how to maintain body balance during different conditions. Also, the course studies the change in energy at rest and during different situations.

Pre req. NFP212**NFP457 Food laws and legislation 3(3-0)**

This course study the history, importance, development, and enforcement of local, national, and international food laws and regulations affecting the industry of food processing and food consumers, and how to contribute to a safe, nutritious, and good quality food supply.

Pre req. NFP432**NFP261 Human Physiology 3(2-3)**

The theoretical part of this course deals with the definition of human physiology, the structure and function of various body systems, such as the digestive, respiratory, nervous, reproductive, urinary and circulatory systems, as well as the structure and organization of the endocrine system and its effects on different body systems. The practical part focuses on measuring some transport mechanisms that occur in cells, conducting some blood tests and measuring blood pressure, determining hemoglobin, in addition to urinalysis.

Pre req. 30203111**30403473 Statistics and Agricultural Experimental Design 3(3-0)**

Statistical measurements. Statistical tests (t and f tests). Principles of experimental design. Tests of hypothesis. Completely randomized design, Randomized complete block design, factorial experiments, and Latin square design. Mean separation. Regression analysis. Use of computer programs (such as SAS and SPSS) in analysis of agricultural experiments.

Al-Balqa' Applied University



تأسست سنة ١٩٩٧

جامعة البلقاء التطبيقية

Pre req. 30202101