

Department of Nutrition and Food Sciences (NFSC)

Chairperson:	Obeid, Omar
Professors:	Hwalla, Nahla; Obeid, Omar; Olabi, Ammar; Toufeili, Imad
Associate Professors:	Abiad, Mohammad; Kharroubi, Samer; Kassem, Issmat; Naja, Farah; Nasreddine, Lara
Assistant Professors:	Fares, Elie Jacques; Jomaa, Lamis
Lecturers:	Chamieh, Marie Claire
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Undergraduate Program

The mission of the Department of Nutrition and Food Science is to produce qualified graduates capable of serving the region in various areas of food science, nutrition and dietetics. The department participates in offering courses within the Faculty of Agricultural and Food Sciences (FAFS) undergraduate core program and additionally offers junior and senior courses that cover areas of major importance in food science, nutrition and dietetics. The department offers two three-year programs, one leading to a BS degree in Nutrition and Dietetics (NTDT) and the other leading to a BS degree in Food Science and Management. Graduates wishing to qualify as licensed dietitians should complete an internship for a minimum of six months in a recognized medical setting.

Moreover, the department offers a four-year Nutrition and Dietetics Program (NDCP), which combines didactic and supervised practice components. The program is U.S. accredited under the International Dietitian Education program standards. It has also been granted candidacy for accreditation status by the Accreditation Council for Education in Nutrition and Dietetics of the Academy of Nutrition and Dietetics, (120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, (312) 899-0040 ext. 5400. <http://www.eatright.org/ACEND>).

Students who intend ultimately to enter the Faculty of Medicine must complete the premedical requirements as outlined in the AUB catalogue, Faculty of Arts and Sciences section titled Premedical Study. Graduates of these programs do not receive the Diploma of Ingénieur Agricole. The following courses are offered by the department:

Core Courses for the BS Degree in Nutrition and Dietetics

NFSC 210 Statistics in Nutrition and Food Sciences 2.3; 3 cr.
 An introduction to the study of statistics as it applies to nutrition and food sciences. Topics include both descriptive and inferential statistics: samples, population and types of data; organizing and graphing data; numerical descriptive measures; probability; discrete random variables and their probability distributions; continuous random variables and the normal distribution; point and interval estimation and hypothesis testing; correlation and simple linear regression; Chi-Square tests. Students will learn to use the computer package SPSS for statistical analysis. *Students cannot receive credit for NFSC 210, STAT 201, STAT 210, STAT 230, ECON 213 or EDUC 227. Fall and Spring.*

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- NFSC 221 Basic Nutrition 3.0; 3 cr.**
The course is a survey of nutrients, including their food sources, digestion, metabolism, functions and requirements in humans. *Fall and Spring.*
- NFSC 222 Community Nutrition 3.0; 3 cr.**
The course is an introduction to key concepts and current topics in community nutrition. The course discusses the role of nutrition in improving the health and well-being of communities and familiarizes students with population nutritional status assessment, principles of nutrition research, and factors involved in planning, implementing and evaluating community nutrition programs and policies. *Prerequisites: NFSC 221 and NFSC 285. Fall.*
- NFSC 229 Menu Planning 0.3; 1 cr.**
The course explores the principles and techniques of menu planning for healthy persons. Topics include nutrient needs for optimum health, dietary guidelines, food groups, food portion sizes and the use of exchange lists for meal planning and client nutrition education in both the English and Arabic languages. *Prerequisites: NFSC 221 and NFSC 240. Spring.*
- NFSC 240 Nutritional Status Assessment 1.3; 2 cr.**
The course exposes students to the theoretical basis of various aspects of nutritional assessment (counseling dietary assessment, anthropometric measurement, biochemical assays and clinical assessment). The course also familiarizes students with nutritional status assessment tools and techniques through practical experimentation in the lab. *Prerequisite: NFSC 221 and NFSC 274. Fall.*
- NFSC 261 Introductory Biochemistry 3.0; 3 cr.**
The course focuses on study of the chemistry of biological compounds, their enzymatic degradation and intermediary metabolism. *Prerequisite: CHEM 208. Fall and Spring.*
- NFSC 265 Food Chemistry 3.0; 3 cr.**
The course focuses on study of the chemical composition and physical and sensory properties of foods. *Prerequisite: CHEM 208. Fall and Spring.*
- NFSC 267 Food Analysis 1.3; 2 cr.**
The course explores laboratory methods for chemical analysis of nutrients and chemicals in food products. *Prerequisites: CHEM 205 and CHEM 209; pre- or corequisite: NFSC 265. Fall and Spring.*
- NFSC 274 Human Nutrition and Metabolism 3.0; 3 cr.**
The course explores human physiological needs for energy, carbohydrates, fats, proteins, vitamins and minerals; control of nutrient metabolism. *Prerequisites: NFSC 221, NFSC 261 and PHYL 246. Fall.*
- NFSC 277 Food Microbiology I 3.0; 3 cr.**
The course is a survey of microorganisms and their role in causing food spoilage and food poisoning, and the control of microbial spoilage and pathogenic microorganisms in foods. *Fall and Spring.*
- NFSC 281 Nutrition in the Life Cycle Lab for NTD 0.3; 1 cr.**
The course emphasizes practical applications of the principles of nutrition and human development in the context of normal physiological changes that occur throughout the

life cycle. It includes evidence-based recommendations and interventions to improve nutrition status and food-related behaviors through the life cycle for individuals, groups and populations. *Prerequisites: NFSC 221 and NFSC 229. Corequisites: NFSC 274 and NFSC 285. Spring.*

NFSC 285 Nutrition in the Life Cycle 2.0; 2 cr.

The course focuses on the basic nutritional needs of individuals throughout their life cycle: infancy, childhood, adolescence, adulthood and old age, and special nutritional requirements for pregnancy and lactation. *Prerequisites: NFSC 221. Corequisite: NFSC 274. Spring.*

NFSC 287 Food Processing 2.0; 2 cr.

The course focuses on the principle of food spoilage, food preservation and the different methods of food processing. *Prerequisites: NFSC 265, and NTDT III or FSMT IIII. Fall and Spring.*

NFSC 289 Food Processing Laboratory 0.3; 1 cr.

The course involves students in laboratory exercises in the pilot plant in food preservation, preparation and processing. *Corequisites: NFSC 287 and NTDT III or FSMT III. Fall and Spring.*

NFSC 290 Food Service Management 2.3; 3 cr.

The course explores techniques of management of functional operation of food service; field trips, self-study modules, reports and discussion. *Prerequisite: NFSC 221; pre- or corequisite: MNGT 215. Fall and Spring.*

NFSC 292 Medical Nutrition Therapy I 3.0; 3 cr.

The course examines selected metabolic diseases, HIV and cancer by covering their etiology, metabolic pathways and the importance of medical nutrition therapy. *Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Fall.*

NFSC 293 Medical Nutrition Therapy II 3.0; 3 cr.

The course is a thorough review of the nutrition care process in the treatment of diet-related diseases. It prepares students to implement the nutrition care process for various conditions, including but not limited to overweight and obesity, diabetes, cardiovascular, gastrointestinal and renal diseases; helps students understand the pathophysiology of selected diseases in which nutritional intervention plays a major role, identify the nutritional needs of patients with disease and develop an appropriate patient nutrition care plan. *Prerequisites: NFSC 274, NFSC 240 and NSFC 285. Spring.*

NFSC 294 Medical Nutrition Therapy Laboratory I for NTDT 0.3; 1 cr.

It is an intensive laboratory course designed to help students learn and practice the application of evidence-based medical nutrition therapy for diseases and disorders discussed in NFSC 292. This is done through the use of self-study modules, case studies, reports and discussions. *Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Corequisite: NFSC 292. Fall.*

NFSC 295 Medical Nutrition Therapy Laboratory II for NTDT 0.3; 1 cr.

It is an intensive laboratory course designed to help students learn and practice the application of evidence-based medical nutrition therapy for diseases and disorders discussed in NFSC 293. This is done through the use of self-study modules, case

studies, reports and discussions. *Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Corequisite: NFSC 293. Spring.*

NFSC 296 **Current Topics in Food Sciences and Nutrition** **1 cr.**
Seminar presentation in current topics in food sciences and nutrition. *Prerequisite: NTDT III. Fall and Spring*

NFSC 298 I **Dietetic Internship** **2 cr.**
Supervised training of at least 6 months in all areas of dietetic practice, clinical, food service and community at an affiliated medical facility. *Offered in Spring for Fall graduates and in Summer for Spring Graduates and renewable until completion of internship duration.*

NFSC 299 **Projects in Nutrition and Food Sciences** **2 cr.**
Directed study. Tutorial. *Prerequisite: NTDT III. Fall and Spring.*

Core Courses for the BS Degree in Nutrition and Dietetic Coordinated Program (NDCP)

NFSC 210 **Statistics in Nutrition and Food Sciences** **2.3; 3 cr.**
An introduction to the study of statistics as it applies to nutrition and food sciences. Topics include both descriptive and inferential statistics: samples, population and types of data; organizing and graphing data; numerical descriptive measures; probability; discrete random variables and their probability distributions; continuous random variables and the normal distribution; point and interval estimation and hypothesis testing; correlation and simple linear regression; Chi-Square tests. Students will learn to use the computer package SPSS for statistical analysis. *Students cannot receive credit for NFSC 210, STAT 201, STAT 210, STAT 230, ECON 213 or EDUC 227. Fall and Spring.*

NFSC 221 **Basic Nutrition** **3.0; 3 cr.**
The course is a nutritional survey of nutrients, including their food sources, digestion, metabolism, functions and requirements in humans. *Fall and Spring.*

NFSC 222 **Community Nutrition** **3.0; 3 cr.**
The course is an introduction to key concepts and current topics in community nutrition. This course discusses the role of nutrition in improving the health and well-being of communities and familiarizes students with population nutritional status assessment, principles of nutrition research and factors involved in planning, implementing and evaluating community nutrition programs and policies. *Prerequisites: NFSC 221 and NFSC 285. Fall.*

NFSC 224 **Advanced Nutrition Principles and Practices** **0.3; 1 cr.**
The course explores principles essential for being a successful Registered Dietitian (RD), including code of ethics, scope of dietetics practice, medical coding, and process of nutrition legislation within the United States. Through the use of real-life clinical case study scenarios and role playing, students will use the Nutrition Care Process (NCP) in developing their nutrition care plans, and practice counseling techniques to improve their effectiveness in providing nutrition education and working with an interdisciplinary team. *Prerequisite: NDCP III. Spring.*

NFSC 225 (A,B) Job Shadowing**0 cr.**

Students will shadow dietitians at different types of facilities covering MNT, Community Nutrition and Foodservice Management. *Prerequisites: NDCP. NFSC 225A is offered in the Winter, and NFSC 225B is offered in the Summer.*

NFSC 229 Menu Planning**0.3; 1 cr.**

The course explores the principles and techniques of menu planning for healthy persons. Topics include nutrient needs for optimum health, dietary guidelines, food groups, food portion sizes and the use of exchange lists for meal planning and client nutrition education in both the English and Arabic languages. *Prerequisites: NFSC 221 and NFSC 240. Spring.*

NFSC 240 Nutritional Status Assessment**1.3; 2 cr.**

The course exposes students to the theoretical basis of various aspects of nutritional assessment (counseling dietary assessment, anthropometric measurement, biochemical assays and clinical assessment). The course also familiarizes students with nutritional status assessment tools and techniques through practical experimentation in the lab. *Prerequisite: NFSC 221. Fall.*

NFSC 261 Introductory Biochemistry**3.0; 3 cr.**

The course focuses on study of the chemistry of biological compounds, their enzymatic degradation and intermediary metabolism. *Prerequisite: CHEM 208. Fall and Spring.*

NFSC 265 Food Chemistry**3.0; 3 cr.**

The course focuses on study of the chemical composition and physical and sensory properties of foods. *Prerequisite: CHEM 208. Fall and Spring.*

NFSC 267 Food Analysis**1.3; 2 cr.**

The course exposes students to laboratory methods for chemical analysis of nutrients and chemicals in food products. *Prerequisites: CHEM 205 and CHEM 209; pre- or corequisite: NFSC 265. Fall and Spring.*

NFSC 274 Human Nutrition and Metabolism**3.0; 3 cr.**

The course focuses on human physiological needs for energy, carbohydrates, fats, proteins, vitamins and minerals; control of nutrient metabolism. *Prerequisites: NFSC 221, NFSC 261 and PHYL 246. Fall and Spring.*

NFSC 275 Quantity Food Production**1.3; 2 cr.**

It is a course whereby principles and methods of buying, preparing and serving foods for various types of quantity food facilities are considered. Standardization of recipes, cost control, safety and sanitation are practiced. Students demonstrate proficiency with food service equipment and utensils, participate in large-scale recipe preparation, and work in teams to create, plan and produce high quality meal (s) for 40-75 people. *Prerequisites: NFSC 290 and NDCP III. Spring.*

NFSC 277 Food Microbiology I**3.0; 3 cr.**

The course is a survey of microorganisms and their role in causing food spoilage and food poisoning, and the control of microbial spoilage and pathogenic microorganisms in foods. *Fall and Spring.*

NFSC 279 Medical Nutrition Therapy Lab I for NDCP 0.3; 1 cr.
 It is an intensive laboratory course designed to help students learn and practice the application of evidence-based medical nutrition therapy utilizing the nutrition care process for diseases and disorders discussed in NFSC 292. This is done through the use of self-study modules, case studies, reports and discussions. *Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Corequisites: NFSC 292 and NDCP III. Fall.*

NFSC 285 Nutrition in the Life Cycle 2.0; 2 cr.
 The course focuses on the basic nutritional needs of individuals throughout their life cycle: infancy, childhood, adolescence, adulthood and old age, and special nutritional requirements for pregnancy and lactation. *Prerequisite: NFSC 221 and NFSC 274. Spring.*

NFSC 286 Nutrition in the Life Cycle Lab for NDCP 0.3; 1 cr.
 The course emphasizes the practical applications of the principles of nutrition and human development in the context of normal physiologic changes that occur throughout the lifecycle. It incorporates problem-based learning through case studies, and employs the nutrition care process for evidence-based implementation of interventions to improve nutrition status and food related behaviors through the life cycle. *Prerequisites: NFSC 221, NFSC 229, NFSC 274, NFSC 285 and NDCP III. Spring.*

NFSC 287 Food Processing 2.0; 2 cr.
 The course focuses on the principle of food spoilage, food preservation and the different methods of food processing. *Prerequisites: NFSC 265, and NTDT III or FSMT III. Fall and Spring.*

NFSC 289 Food Processing Laboratory 0.3; 1 cr.
 The course involves students in laboratory exercises in the pilot plant in food preservation, preparation and processing. *Pre- or corequisites: NFSC 287. Prerequisite: NTDT III, NDCP III or FSMT III. Fall and Spring.*

NFSC 290 Food Service Management 2.3; 3 cr.
 The course focuses on techniques of management of functional operation of food service; field trips, self-study modules, reports and discussion. *Prerequisite: NFSC 221; pre- or corequisite: MNGT 215. Fall and Spring.*

NFSC 292 Medical Nutrition Therapy I 3.0; 3 cr.
 The course examines selected metabolic diseases, HIV and cancer by covering their etiology, metabolic pathways and the importance of medical nutrition therapy. *Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Fall.*

NFSC 293 Medical Nutrition Therapy II 3.0; 3 cr.
 The course is a thorough review of the nutrition care process in the treatment of diet-related diseases. The course prepares students to implement the nutrition care process for various conditions, including but not limited to overweight and obesity, diabetes, cardiovascular, gastrointestinal and renal diseases. It helps students: 1) understand the pathophysiology of selected diseases in which nutritional intervention plays a major role, 2) identify the nutritional needs of patients with disease and 3) develop an appropriate patient nutrition care plan. *Prerequisites: NFSC 274, NFSC 240 and NFSC 285. Spring.*

NFSC 296 Current Topics in Food Sciences and Nutrition 1 cr.
 The course is a seminar presentation in current topics in food sciences and nutrition. *Prerequisite: NTDT or NDCP III. Fall and Spring.*

NFSC 297 Medical Nutrition Therapy Lab II for NDCP 0.3; 1 cr.
 It is an intensive laboratory course designed to help students learn and practice the application of evidence-based medical nutrition therapy utilizing the nutrition care process for diseases and disorders discussed in NFSC 293. This is done through the use of self-study modules, case studies, reports and discussions. *Prerequisites: NFSC 240, NFSC 274 and NFSC 285. Corequisites: NFSC 293 and NDCP III. Spring.*

NFSC 299 Projects in Nutrition and Food Sciences 2 cr.
 The course is a directed study. Tutorial. *Prerequisite: NTDT or NDCP III. Fall and Spring.*

NFSC 283 Nutrition Education and Communication 3 cr.
 The course focuses on principles of health behavior, learning theories and their application to nutrition education and nutrition counseling practice. Equips students with the necessary communication tools and techniques to help prevent nutrition-related disease and promote health. *Prerequisite: NDCP IV. Fall.*

NFSC 284 (A, B) Seminar in Clinical Dietetics 1 cr.
 This course focuses on developing the communication and research skills as well as on strengthening the critical thinking capacities of CP students undergoing an intensive internship program by providing them the opportunity to present and discuss all interesting nutritional issues arising during their CP practicum. It is divided into NFSC 284A and 284B. *Prerequisite: NDCP IV. Fall and Spring.*

NFSC 298 Dietetic Practicum 28 cr.
(W, SU, F, S)
 The course involves training for a minimum of 1200 hours at an affiliated medical facility. *Prerequisite: NDCP IV.*

Core Courses for the BS Degree in Food Science and Management (FSMT)

NFSC 210 Statistics in Nutrition and Food Sciences 2.3; 3 cr.
 An introduction to the study of statistics as it applies to nutrition and food sciences. Topics include both descriptive and inferential statistics: samples, population and types of data; organizing and graphing data; numerical descriptive measures; probability; discrete random variables and their probability distributions; continuous random variables and the normal distribution; point and interval estimation and hypothesis testing; correlation and simple linear regression; Chi-Square tests. Students will learn to use the computer package SPSS for statistical analysis. *Students cannot receive credit for NFSC 210, STAT 201, STAT 210, STAT 230, ECON 213 or EDUC 227. Fall and Spring.*

NFSC 221 Basic Nutrition 3.0; 3 cr.
 The course is a survey of nutrients, including their food sources, digestion, metabolism, functions and requirements in humans. *Fall and Spring.*

NFSC 261 Introductory Biochemistry 3.0; 3 cr.
 The course focuses on the chemistry of biological compounds, their enzymatic degradation and intermediary metabolism. *Prerequisite: CHEM 208. Fall and Spring.*

- NFSC 265 Food Chemistry 3.0; 3 cr.**
The course focuses on study of the chemical composition and physical and sensory properties of foods. *Prerequisite: CHEM 208. Fall and Spring.*
- NFSC 267 Food Analysis 1.3; 2 cr.**
The course exposes students to laboratory methods for chemical analysis of nutrients and chemicals in food products. *Prerequisites: CHEM 205 and CHEM 209. Pre- or corequisite: NFSC 265. Fall and Spring.*
- NFSC 272 Introduction to Food Service and Industries 1.3; 2 cr.**
The course is an introduction to food service and the food industry. This course explains the food chain system and describes the food service institutions and different food industries; it also includes visits to different institutions in the food chain. *Prerequisites: Junior Status, FSMT II. Spring.*
- NFSC 277 Food Microbiology I 3.0; 3 cr.**
It is a survey of microorganisms and their role in causing food spoilage and food poisoning, and the control of microbial spoilage and pathogenic microorganisms in foods. *Fall and Spring.*
- NFSC 278 Food Microbiology II 2.3; 3 cr.**
The course focuses on study of the microbiological aspects of food preservation; beneficial utilization of microorganisms in food applications; detection of microbial contamination and hazards of importance to public health. *Prerequisite: NFSC 277. Spring.*
- NFSC 280 Summer Training in Food Establishments 1 cr.**
The course involves students in supervised training in one of the food service institutions or food industries. *Prerequisite: NFSC 272. Summer.*
- NFSC 282 Food Quality Management 3.0; 3 cr.**
The course covers basic principles of food quality control, quality assurance, and quality management in food service establishments and food industries; emphasis on modern concepts such as HACCP, ISO 9000 and Good Manufacturing Practice. *Fall.*
- NFSC 287 Food Processing 2.0; 2 cr.**
Principle of food spoilage, food preservation and different methods of food processing. *Prerequisites: NFSC 265, and NTDT III or FSMT III. Fall and Spring.*
- NFSC 288 Technology of Food Products 2.3; 3 cr.**
Technology and processing of foods; includes processing food products in the pilot plant. *Prerequisites: NTDT III, and FSMT III or AGRL IV. Fall.*
- NFSC 289 Food Processing Laboratory 0.3; 1 cr.**
Laboratory exercises in the pilot plant in food preservation and processing. *Pre- or corequisites: NFSC 287. Prerequisite: NTDT III, NDCP III or FSMT III. Fall and Spring.*
- NFSC 291 Elements of Food Engineering 3.0; 3 cr.**
Basic concepts and principles of food engineering; emphasis on food handling and unit operations utilized in food processing. *Prerequisites: MATH 204 and FSMT III. Spring.*

NFSC 296 **Current Topics in Food Sciences and Nutrition** **1 cr.**
Seminar presentation in current topics in food sciences and nutrition. *Prerequisite: NTDT III or FSMT III. Fall and Spring.*

NFSC 299 **Projects in Nutrition and Food Sciences** **2 cr.**
Directed study. Tutorial. *Prerequisite: NTDT III or FSMT III. Fall and Spring.*

Core Course for the BS Degree in Agribusiness

NFSC 252 **Introduction to Food Processing** **3.0; 3 cr.**
Technology and processing of foods; includes different technologies applied to preserve and process food from post-harvest stages till being ready for consumption. Processing methods covered relate to cereals, dairy products, meat, poultry, fats and oils, fermentation, fruits and vegetables, as well as to beverages. *Fall and Spring.*

Elective Course neither for Nutrition and Dietetics nor for Food Science and Management

NFSC 215 **Gender, Food and Nutrition** **3.0; 3 cr.**
Goal 5 of the United Nations' Sustainable Development Goals (SDGs) aims to "achieve gender equality and empower all women and girls" around the world. While women and girls often have increased nutritional needs during the lifecycle, social norms in many parts of the world frequently lead to gender inequalities in nutrition, which tend to disfavor females. This course discusses nutrition from a gender equality lens and sheds light on their mutually reinforcing relation: improving nutrition is crucial to achieve gender equality and, in turn, improving gender equality contributes to better nutrition. The course will discuss the changing nutritional needs throughout the lifespan, the social and cultural norms affecting food choice, and the prevalent gender disparities in food and nutrition security. The course will also highlight the need to focus on improving nutrition of girls and women as a public health strategy aimed at curbing the growing burden of chronic diseases in modern societies.

NFSC 220 **Food and Nutrition Awareness** **3.0; 3 cr.**
The course introduces the discipline of nutrition and assists students in making optimal food choices for better health. *Elective. Fall and Spring.*

NFSC 223 **Nutrition and Physical Activity** **3.0; 3 cr.**
Inadequate physical activity and a poor diet are considered to be leading causes of many major diseases. Exercise has potent effects on the metabolism of both macro and micronutrients. Exercise and nutrition together offer a powerful intervention for many health problems, including sarcopenia, metabolic disease and obesity. This course is designed to give students an understanding of the fundamental interactions between exercise, nutrition and health, mainly with lifestyle changes based on current international dietary and physical activity guidelines. *Elective. Fall and Spring.*

NFSC 252 **Introduction to Food Processing** **3.0; 3 cr.**
Technology and processing of foods; includes the different technologies applied to preserve and process food from post-harvest stages till being ready for consumption. Processing methods covered relate to cereals, dairy products, meat, poultry, fats and oils, fermentation, fruits and vegetables, as well as to beverages. *Elective. Fall and Spring.*