

NFSC - NUTRITION AND FOOD SCIENCE

NFSC412 Food Processing Technology (4 Credits)

Provides in-depth study of the major industrial modes of food preservation. It integrates aspects of the biology, microbiology, biochemistry and engineering disciplines as they relate to food processing technology and food science.

Prerequisite: CHEM241, CHEM242, NFSC431, NFSC414, and NFSC434.

Corequisite: NFSC421 and NFSC423.

Recommended: MATH120; or completion of MATH220 recommended.

NFSC414 Mechanics of Food Processing (4 Credits)

Applications in the processing and preservation of foods, of power transmission, hydraulics, electricity, thermodynamics, refrigeration, instruments and controls, materials handling and time and motion analysis.

Prerequisite: PHYS121.

Credit Only Granted for: ENBE414 or NFSC414.

Formerly: ENBE414.

NFSC421 Food Chemistry (3 Credits)

Basic chemical and physical concepts are applied to the composition and properties of foods. Emphasis on the relationship of processing technology to the keeping quality, nutritional value, and acceptability of foods.

Prerequisite: BCHM461.

NFSC422 Food Product Research and Development (3 Credits)

A capstone course for FDSC majors. A study of the research and development of new food products. Application of food technology, engineering, safety and packaging are integrated by teams of students to develop a new food product from concept to pilot plant scale-up. Students will travel to nearby food processing plants on two to four Saturdays during the semester.

Restriction: Senior standing; and must be in a major within AGNR-Nutrition and Food Science department; and permission of AGNR-Nutrition and Food Science department.

Formerly: FDSC422.

NFSC423 Food Chemistry Laboratory (3 Credits)

Analysis of the major and minor constituents of food using chemical, physical and instrumental methods in concordance with current food industry and regulatory practices. Laboratory exercises coincide with lecture subjects in NFSC421.

Prerequisite: Must have completed or be concurrently enrolled in NFSC421.

NFSC425 International Nutrition (3 Credits)

Nutritional status of world population; consequences of malnutrition on health and mental development; and local, national, and international programs for nutritional improvement.

Prerequisite: Must have completed one course in basic nutrition.

NFSC430 Food Microbiology (3 Credits)

A study of microorganisms of major importance to the food industry with emphasis on food-borne outbreaks, public health significance, bioprocessing of foods, disease control, and the microbial spoilage of foods.

Prerequisite: BSCI223; or permission of instructor.

Credit Only Granted for: ANSC430 or NFSC430.

Formerly: FDSC430.

NFSC431 Food Quality Control (4 Credits)

Definition and organization of the quality control function in the food industry; preparation of specifications; statistical methods for acceptance sampling; in-plant and processed product inspection. Instrumental and sensory methods for evaluating sensory quality, identity and wholesomeness and their integration into grades and standards of quality. Statistical Process Control (SPC).

NFSC434 Food Microbiology Laboratory (3 Credits)

A study of techniques and procedures used in the microbiological examination of foods.

Prerequisite: Must have completed or be concurrently enrolled in NFSC430.

Credit Only Granted for: NFSC434 or ANSC434.

Formerly: FDSC434.

NFSC440 Advanced Human Nutrition (4 Credits)

A critical study of physiologic, molecular and metabolic influences on utilization of carbohydrates, lipids, proteins, vitamins, macro-and micro-minerals, and nonnutritive components of food. Interactions of these nutrients and food components will be examined relative to maintaining health.

Prerequisite: BCHM462, BSCI440, and NFSC100; and permission of AGNR-Nutrition and Food Science department.

NFSC450 Food and Nutrient Analysis (3 Credits)

Methods and practices of the analysis of foods and nutrients. An overview of the principles and basic mechanisms used in many of the analytical procedures commonly used in food and nutrition research. Emphasis will be placed on hands-on development of skills necessary to complete each analytical procedure; and on the accurate and concise description of the methodology and results from their application and on the regulations governing food analysis for nutritional labeling.

Prerequisite: BCHM461 and NFSC100.

Formerly: NUTR450.

NFSC460 Medical Nutrition Therapy (4 Credits)

Modifications of the normal adequate diet to meet human nutritional needs in acute and chronic diseases and metabolic disorders.

Prerequisite: NFSC380 and NFSC440; and permission of AGNR-Nutrition and Food Science department.

Formerly: NUTR460.

NFSC470 Community Nutrition (3 Credits)

Perspectives underlying the practice of nutrition services in community settings. Assessment of needs, program planning and evaluation.

Programs and strategies to meet nutrition needs outside the acute care setting, such as nutrition education and food assistance. National nutrition policy and federal initiatives in nutrition will be examined. Students will be required to travel to local community nutrition sites during the semester.

Prerequisite: NFSC315; and permission of AGNR-Nutrition and Food Science department.

Formerly: NUTR470.

NFSC490 Special Problems in Nutrition (2-3 Credits)

Individually selected problems in the area of human nutrition.

Prerequisite: NFSC440; and permission of AGNR-Nutrition and Food Science department.

NFSC491 Issues and Problems in Dietetics (3 Credits)

A capstone course for dietetics majors. Students will integrate knowledge and theory of nutrition, food, management, psychology, and social behaviors necessary to support quality dietetic practice. Working in teams, students will participate in case studies, simulated situations and community projects. Individuals and groups will present cases as well as papers on published research.

Prerequisite: NFSC350; and permission of AGNR-Nutrition and Food Science department.

Corequisite: NFSC460.

Restriction: Senior standing or higher; and must be in Nutrition and Food Science: Dietetics program.

NFSC498 Selected Topics (1-3 Credits)

Selected current aspects of food.

Restriction: Permission of AGNR-Nutrition and Food Science department.

Repeatable to: 6 credits if content differs.

NFSC605 Food-Related Behavior of the Individual (3 Credits)

Examination of the factors that influence food-related behavior and of the research methods used.

Restriction: Permission of AGNR-Nutrition and Food Science department.

Formerly: FOOD670.

NFSC611 Molecular Nutrition: Genomic, Metabolic, and Health Aspects (2 Credits)

The emerging discipline of molecular nutrition encompasses nutritional biochemistry, nutritional genomics, nutritional metabolomics, and epigenetics. It focuses on the effects of diet and nutrients on an individual's genome and metabolism, and how the molecular events affect human health. This is a co-taught course together with National Taiwan University via videoconferencing.

Recommended: BCHM461, NFSC440, or BCHM463.

NFSC620 Diet and Cancer Prevention (3 Credits)

1. The nature of cancer and the relationship between dietary/nutritional factors and incidence of cancer 2. Basic concepts of general cancer biology with focus on effects of dietary components on genes and their encoded proteins, epigenetic changes and cell signaling 3. Effect of dietary factors in various types of cancer with respect to the benefit of intervention strategies for chemoprevention 4. Scientific knowledge, critical thinking, and the practical application of diet in cancer prevention.

Prerequisite: NFSC440; or permission of instructor.

Credit Only Granted for: NFSC620 or NFSC679D.

Formerly: NFSC678D.

NFSC630 Nutritional Aspects of Energy Balance (3 Credits)

The prevalence and basic causes of caloric imbalance, along with a wide variety of approaches to weight control.

Formerly: NUTR630.

NFSC631 Advanced Food Microbiology (3 Credits)

One lecture and one laboratory period a week. An in-depth understanding and working knowledge of a selected number of problem areas and contemporary topics in food microbiology.

Prerequisite: NFSC430.

Restriction: Permission of instructor.

NFSC633 Food Polymer Science (3 Credits)

Food polymers including protein and carbohydrate from food, and their chemical, physical, and functional properties together with their structure-function relationship will be discussed. Food polymer applications in food and non-food areas will be covered. Principles and applications of instrumental methods for polymer characterization will be introduced. An emphasis on nanotechnology and its application to design and characterization food polymers will be included.

Prerequisite: Permission of instructor.

Credit Only Granted for: NFSC633 or NFSC679P.

Formerly: NFSC679P.

NFSC650 Nutrition and Public Health (2 Credits)

Overview of the major policy debates involving nutrition and health in the U.S. Public Health System associated with nutrition, chronic disease and nutrition lifestyle stages will be discussed. The CDCynergy software program will facilitate the development of program design, implementation and evaluation skills.

Prerequisite: NFSC470.

Restriction: Permission of AGNR-Nutrition and Food Science department.

NFSC655 Nutrition, Food and Public Policy (3 Credits)

History and current status of legislation relative to nutrition and food.

Focus on gaining insights and skills regarding working effectively in the area of nutrition and policy.

Formerly: NUTR655.

NFSC660 Research Methods (3 Credits)

A study of appropriate research methodology and theories including experimental design. Each student is required to develop a specimen research proposal.

Prerequisite: Must have completed one statistics course.

Formerly: NUTR 660.

NFSC675 Nutritional Epidemiology (3 Credits)

Discussion of definition, history, relevance, and application of nutritional epidemiology to national and international nutrition problems. Exposure to skills and methodological tools used in nutritional epidemiology. Practical examples of epidemiologic studies also performed.

Prerequisite: NFSC440.

Corequisite: BIOM602.

Formerly: NUTR675.

NFSC678 Selected Topics in Nutrition (1-6 Credits)

Individual or group study in an area of nutrition.

Repeatable to: 6 credits.

Formerly: NUTR678.

NFSC679 Selected Topics in Food Science (1-6 Credits)

Individual or group study in an area of food science.

Repeatable to: 6 credits if content differs.

NFSC680 Human Nutritional Status (3 Credits)

Indirect and direct methods of appraisal of human nutritional status which include: dietary, anthropometric, clinical evaluations and biochemical measures.

Prerequisite: Must have complete coursework in advanced nutrition, biochemistry and physiology.

NFSC688 Seminar in Nutrition and Food Science (1-3 Credits)

This is a seminar course presented by NFSC graduate students and invited speakers in the field of nutrition and food science.

Restriction: Must be in a major within AGNR-Nutrition and Food Science department.

Repeatable to: 3 credits.

Formerly: NUTR688.

NFSC690 Nutrition and Aging (3 Credits)

Explore the nutrition needs of older adults and examine the potential impact of the physiological, social and psychological changes that occur with aging on the needs.

Prerequisite: NFSC440 or BSCI440; or students who have taken courses with comparable content may contact the department.

NFSC698 Colloquium in Food Science (1 Credit)

Oral reports on special topics or recently published research in food science and technology. Distinguished scientists are invited as guest lecturers. A maximum of three credits allowed for the M.S.

Formerly: FDSC698.

NFSC699 Problems in Nutrition and Food Science (1-4 Credits)

Credit according to time scheduled and magnitude of problem. An experimental program on a topic other than the student's thesis problem will be conducted. Four credits shall be the maximum allowed toward an advanced degree.

Restriction: Permission of AGNR-Nutrition and Food Science department.

Formerly: FDSC 699 and NUTR 699.

NFSC735 Food Toxicology (3 Credits)

An introduction to basic concepts in toxicology in relation to toxic food contaminants and additives; both synthetic and naturally occurring. Focus on exposure routes, molecular targets and susceptible individuals. Also includes regulatory toxicology with respect food toxins.

Recommended: BCHM462, BSCI440, or CHEM131. Also offered as: MIEH735.

Credit Only Granted for: MIEH735 or NFSC735.

NFSC799 Master's Thesis Research (1-6 Credits)

First and second semesters. Credit in proportion to work done and results accomplished. Investigation in some phases of foodservice administration which may form the basis of a thesis. results in the form of a thesis.

Formerly: FDSC 799, NUSC 799, and NUTR 799.

NFSC898 Pre-Candidacy Research (1-8 Credits)

First and second semesters. Oral reports on special topics or recently published research in nutrition. Distinguished scientists are invited as guest lecturers. A maximum of three credits allowed for the M.S.

Formerly: NUSC898.

NFSC899 Doctoral Dissertation Research (1-8 Credits)