

NUTRITION AND FOOD SCIENCE

Office: 3009 Science Hall; 313-577-2500

Chairperson: Ahmad R. Heydari

Undergraduate Advisor: Deanna L. Cavanaugh

<https://clas.wayne.edu/nfs> (<https://clas.wayne.edu/nfs/>)

The courses offered by this department are designed for students in three distinct groups:

1. those majoring in nutrition and food science who are interested in entering either the nutrition, the food science and health care professions;
2. those interested in entering the dietetics field; and
3. those majoring in nutrition and food science with the intention of entering non-technical positions in a variety of food businesses.

BEAVERS, ALYSSA: Ph.D., Michigan State University; M.S., R.D., Iowa State University; Assistant Professor

BURGHARDT, PAUL: Ph.D., M.S., University of South Carolina; Assistant Professor

DIANE, CABELOF: Ph.D., Wayne State; M.A. Immaculate College; B.A., Allegheny College; Associate Professor

DROGAS, FREDRICK J.: M.S., Wayne State University; Lecturer

GUPTA, SMITI: Ph.D., M.S., Wayne State University; B.S., Panjab University; Associate Professor

HEYDARI, AHMAD: Ph.D., M.S., Illinois State University; B.A., Illinois University; Professor and Chair

JEN, K-L CATHERINE: Ph.D., M.A. Wayne State University; B.S., University of Taiwan; Professor

KHOSLA, PRAMOD: Ph.D., University of Western Ontario; M.Sc., B.Sc., Newcastle University; Associate Professor

REINHARD, TONIA: M.S., Wayne State University; Lecturer

WIDTH, MARY: M.S., Central Michigan University; Lecturer

XU, SUXUAN (SUE): Ph.D., The University of Georgia; Assistant Professor - Teaching

ZHANG, YIFAN: Ph.D., University of Maryland; Associate Professor

ZHOU, KEQUAN: Ph.D., University of Maryland; Professor

- Dietetics (B.S.) (<http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/nutrition-food-science/dietetics-bs/>)
- Dietetics (Post-Bachelor Certificate) (<http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/nutrition-food-science/dietetics-post-bachelor-certificate/>)
- Nutrition and Food Science (B.A.) (<http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/nutrition-food-science/nutrition-food-science-ba/>)
- Nutrition and Food Science (B.S.) (<http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/nutrition-food-science/nutrition-food-science-bs/>)

- Nutrition and Food Science Minor (<http://bulletins.wayne.edu/undergraduate/college-liberal-arts-sciences/nutrition-food-science/nutrition-food-science-minor/>)

NFS 2030 Nutrition and Health Cr. 3

Satisfies General Education Requirement: Life Sciences, Natural Scientific Inquiry

Food as a carrier of nutrients; food availability; nutrient utilization including digestion, metabolism and excretion. Patterns of food consumption based on biological, psychological and social needs; and anthropological findings. Offered Every Term.

Repeatable for 6 Credits

NFS 2130 Introductory Food Science Cr. 3

Chemical, physical and biological properties of foods which affect their keeping quality, nutritional and organoleptic values. For students interested in the scientific study of foods. Offered Every Term.

NFS 2140 Introductory Food Science Laboratory Cr. 1

Experimental study of principles discussed in NFS 2130. For students interested in the scientific study of food. Offered Every Term.

Course Material Fees: \$90

NFS 2220 Nutrition Laboratory Cr. 1

Laboratory course for introductory nutrition. Meets General Education Laboratory requirement. Offered Every Term.

Prerequisites: NFS 2030 with a minimum grade of C- (may be taken concurrently) or NFS 3230 with a minimum grade of C- (may be taken concurrently)

Course Material Fees: \$90

NFS 3230 Human Nutrition Cr. 3-4

Principles of the science of nutrition. Emphasis on physiological requirements as well as biochemical and metabolic processes of nutrients for human growth, development and maintenance within the life cycle. Honors students participate in additional reading, discussion and presentations. Offered Every Term.

Prerequisites: NFS 2030 with a minimum grade of C-

NFS 3270 Eating Disorders Cr. 3

Causes and treatments of anorexia nervosa, bulimia nervosa, binge eating, and overeating, from biological, psychological, and social perspectives. Offered Winter.

Prerequisite: PSY 1010 with a minimum grade of C- or PSY 1020 with a minimum grade of C-

NFS 3300 Science, History, and Culture of Italian Cuisine Cr. 3

Satisfies General Education Requirement: Cultural Inquiry, Global Learning Inquiry

Explores the science, history, and culture of Italian food and the Mediterranean Diet, and how Italian food culture has evolved throughout the centuries. Taught in English. Offered Yearly.

Course Material Fees: \$15

Equivalent: ITA 3300

NFS 4100 Nutrition Care Process I Cr. 2

Introduction to management of nutrition care in both healthy and ill people throughout the life span using the Nutrition Care Process model, developed by the Academy of Nutrition and Dietetics. Emphasis is on the Registered Dietitian's role in the four steps of the process, nutrition assessment, diagnosis, intervention, and monitoring and evaluation. The process covers identification of nutrition-related problems in patients, planning intervention to solve their nutrition problems and reduce nutrition-related health risks associated with chronic disease. Offered Fall.

Prerequisite: NFS 3230 with a minimum grade of C- and NFS 5220 (may be taken concurrently) with a minimum grade of B- and NFS 5350 (may be taken concurrently) with a minimum grade of B-

Restriction(s): Enrollment limited to students in a PBC in Dietetics degree.

Course Material Fees: \$90

NFS 4120 Nutrition Care Process II Cr. 2

In-depth and simulation-based application of the steps of the Nutrition Care Process, including nutritional assessment, interpretation of biochemical parameters, drug-nutrient interactions, planning therapeutic diets, documenting in the medical record, and patient interviewing. Offered Winter.

Prerequisite: NFS 4100 with a minimum grade of B- and NFS 5250 (may be taken concurrently) with a minimum grade of B-

Restriction(s): Enrollment limited to students in a PBC in Dietetics degree.

NFS 4150 Advanced Food Science Cr. 3

Satisfies General Education Requirement: Writing Intensive Competency Principles of food science such as: chemical ingredients of food, issues in food product development, sensory evaluation, and microbiological safety of food. Lab provides hands-on experience and enhances understanding of major issues in the overall quality and safety of food. Offered Winter.

Course Material Fees: \$90

NFS 4160 Food Laws and Regulations Cr. 3

State, federal and international food law; interpretations of regulatory food standards and determination of conformity of food products to them. Methods of food inspection. Role of the food law in assuring food safety, wholesomeness and nutritional quality. Offered Every Term.

NFS 4200 Dietetic Practice I Cr. 4

Supervised practice in various dietetic services venues. Offered Winter.

Prerequisite: NFS 4100 with a minimum grade of B- and NFS 4120 (may be taken concurrently) with a minimum grade of B-

Restriction(s): Enrollment limited to students in a PBC in Dietetics degree.

Course Material Fees: \$400

NFS 4210 Dietetic Practice II Cr. 10

Satisfies General Education Requirement: Writing Intensive Competency Supervised practice in specialty and critical care areas and in community settings; experiences in developing, implementing, evaluating and documenting care plans for individuals needing specialized nutrition support and nutrition education programs for health promotion and for high risk groups. Offered Fall.

Prerequisite: NFS 4100 with a minimum grade of B- and NFS 4120 with a minimum grade of B- and NFS 5250 with a minimum grade of B- and NFS 5200 (may be taken concurrently) with a minimum grade of B-

Restriction(s): Enrollment limited to students in a PBC in Dietetics degree.

Course Material Fees: \$700

NFS 4220 Dietetic Practice III Cr. 10

Supervised practice in various specialty, critical care, and long-term care areas and/or in community settings. Experiences in developing, implementing, evaluating and documenting care plans for individuals needing nutrition care and specialized nutrition support, and nutrition education programs for health promotion and for high risk groups.

Offered Winter.

Prerequisite: NFS 4210 with a minimum grade of B- and NFS 5360 (may be taken concurrently) with a minimum grade of B-

Restriction(s): Enrollment limited to students in a PBC in Dietetics degree.

Course Material Fees: \$700

NFS 4230 Macronutrient Metabolism Cr. 3

Focus on normal human nutrition and physiological functions. Biochemical properties of macronutrients and their interrelationships at the cellular and subcellular level. Offered Fall.

Prerequisites: NFS 2130 with a minimum grade of C-, NFS 3230 with a minimum grade of C-, and CHM 1240 with a minimum grade of D

Restriction(s): Enrollment is limited to Undergraduate level students.

NFS 4231 Human Nutrition: Micronutrients Cr. 3

Principles of micronutrient metabolism, including function, toxicity, and deficiency; principles and techniques for assessing micronutrient status. Micronutrients in the physiopathology of chronic disease; sources of micronutrients and factors affecting nutrient bioavailability. Impact of disease and/or genetics on nutrient function and nutrient requirement; role of fortification, enrichment, and/or supplementation of micronutrients in the food supply and on health outcomes. Offered Winter.

Prerequisites: NFS 2130 with a minimum grade of C-, NFS 3230 with a minimum grade of C-, and CHM 1240 with a minimum grade of D

NFS 4990 Directed Study Cr. 1-4

Offered Every Term.

Repeatable for 4 Credits

NFS 5100 Nutrition Care Process I Cr. 2

Introduction to management of nutrition care in both healthy and ill people throughout the life span using the Nutrition Care Process model, developed by the Academy of Nutrition and Dietetics. Emphasis is on the Registered Dietitian's role in the four steps of the process, nutrition assessment, diagnosis, intervention, and monitoring and evaluation. The process covers identification of nutrition-related problems in patients, planning intervention to solve their nutrition problems and reduce nutrition-related health risks associated with chronic disease. Offered Yearly.

Prerequisites: NFS 2130, NFS 2140, NFS 2030, and NFS 3230

Restriction(s): Enrollment is limited to Graduate level students.

NFS 5120 Nutrition Care Process II Cr. 2

Builds on Nutrition Care Process I (NFS 5100). Emphasis is on the RD's role in treating patients with nutrition-related problems by means of planning intervention to assist individuals in meeting nutritional needs and decrease nutrition-related health risks associated with chronic disease. Specific content on medical nutrition therapy includes interpretation of biochemical parameters related to specific disease states (e.g. glucose, lipids, therapeutic diets, drug-nutrient interactions, and diet instruction. Offered Yearly.

Prerequisites: NFS 5100, NFS 5220, and NFS 5350

Restriction(s): Enrollment is limited to Graduate level students.

NFS 5130 Food Chemistry Cr. 3

Study of the chemical constituents of foods, their relationship to the biological and physical properties, and overall food quality. Offered Fall, Winter.

Prerequisites: CHM 2220 with a minimum grade of C- (must be taken at WSU) and NFS 2130 with a minimum grade of C-

NFS 5140 Laboratory Techniques in Nutrition and Food Science Cr. 3

Satisfies General Education Requirement: Writing Intensive Competency
Basic modern and classical analytical techniques and instruments in nutrition and food science. Background theory to principles of instrumental assays. Procedures for evaluation of macro and micro food components analysis. Physiological functions relevant to nutrition. Offered Fall.

Prerequisites: CHM 2220 with a minimum grade of D, NFS 2130 with a minimum grade of C-, and NFS 2220 with a minimum grade of C-

Course Material Fees: \$90

NFS 5145 Fundamentals of Fermentation Cr. 3

The role of the microbiome (commensal bacteria) in human health has enjoyed a surge in interest and diet is recognized as one of the most impactful factors influencing the gut microbiome. We are just beginning to understand the impact of specific food constituents, their preparation, processing, and preservation, on gut microbiome and health. This course will introduce the theoretical and practical aspects of fermentation of food products as a means for altering the nutritional and sensory states, preservation, and the potential impacts on human health. Offered Yearly.

Prerequisite: NFS 4150 with a minimum grade of C- or NFS 5140 with a minimum grade of C-

NFS 5150 Food Safety Assurance Cr. 4

This is a senior level undergraduate course that provides students in-depth knowledge and practices of food safety management. Topics include GMP (Good Manufacturing Procedures), SSOP (Sanitation Standard Operation Procedures), HACCP, Preventive Controls for Human Food, and Foreign Supplier Verification Program, and PCQI (Preventive Control Qualified Individual). Upon successful completion of this course students could earn two certificates: PCQI (for human food) certification by the FSPCA and HACCP certification accredited by the International HACCP alliance. Offered Yearly.

Prerequisites: NFS 2130 with a minimum grade of C-, NFS 2140 with a minimum grade of C-, BIO 2200 with a minimum grade of C-, or CHM 1100 with a minimum grade of C-

NFS 5170 Nutrition, Physical Activity, and the Brain Cr. 3

Neurobehavioral responses and adaptations to dietary constituents and physical activity/inactivity. Offered Fall.

Prerequisite: NFS 3230 with a minimum grade of C- or BIO 3200 with a minimum grade of C- or PSY 3330 with a minimum grade of C-

NFS 5200 Advanced Dietetics Cr. 3

Development and refinement of dietetic practitioner skills through application in critical care and specialty practice areas such as nutrition support, renal, oncology, pulmonary, stress and trauma. Offered Fall.

Prerequisite: NFS 4100 with a minimum grade of B- and NFS 4120 with a minimum grade of B- and NFS 5250 with a minimum grade of B- and NFS 4210 (may be taken concurrently) with a minimum grade of B-

Restriction(s): Enrollment limited to students in a PBC in Dietetics degree.

Course Material Fees: \$90

Equivalent: NFS 4200

NFS 5220 Community Nutrition Cr. 2

Introduction to management of nutritional care in healthy and at-risk persons throughout the lifespan. Identifying problems and planning interventions to meet population nutritional problems and to reduce nutrition-related health risks in community settings. Community assessment; organization and function of community agencies; interventions appropriate to small and large groups, including nutrition education. Offered Fall, Spring/Summer.

Prerequisite: NFS 2130 with a minimum grade of C- and NFS 2140 with a minimum grade of C- and NFS 3230 with a minimum grade of C-

NFS 5240 Nutritional Epidemiology Cr. 3

The purpose of this class is for the students to gain an in-depth understanding of the relationships between diet, health and diseases: to gain an appreciation for the statistical processes involved in nutritional epidemiologic studies and to examine objectively the collection and use of the nutritional information used in epidemiologic studies. Offered Fall.

Prerequisite: NFS 3230 with a minimum grade of C- or PH 3300 with a minimum grade of C-

NFS 5250 Nutrition and Disease Cr. 4

Application of the principles of biochemistry and physiology in the study of nutrient metabolism as altered by disease. The physio-biochemical basis for diet in the treatment of disease. Offered Winter, Spring/Summer.

Prerequisites: NFS 4230 with a minimum grade of C- and NFS 4231 with a minimum grade of C-

NFS 5350 Organization and Management of Food Service Systems Cr. 4

Survey of food service systems; factors affecting their successful operation. Components of quality assurance supporting well-being of target markets. Identification of operative management skills. Offered Fall.

Prerequisite: NFS 2130 with a minimum grade of C- and NFS 2140 with a minimum grade of C- and NFS 3230 with a minimum grade of C- and MGT 2530 with a minimum grade of C-

NFS 5360 Management of Nutritional Care and Services Cr. 3

Application of management theory and principles in the three areas of dietetic practice; career planning and professional role development. Offered Winter.

Prerequisite: NFS 5200 with a minimum grade of B- and NFS 4220 (may be taken concurrently) with a minimum grade of B-

Restriction(s): Enrollment limited to students in a PBC in Dietetics degree.

NFS 5510 Supervised Practice I Cr. 3

Supervised practice is in clinical (acute care), long-term care, food service, community, and an elective setting. Students may be placed in various SP experiences in any for the NFS 5500-5530 courses; each course is not a specific type of SP. Placements will be based on site availability. Offered Yearly.

Restriction(s): Enrollment is limited to Graduate level students.

NFS 5520 Supervised Practice II Cr. 3

Supervised practice is in clinical (acute care), long-term care, food service, community, and an elective setting. Students may be placed in various SP experiences in any for the NFS 5500-5530 courses; each course is not a specific type of SP. Placements will be based on site availability. Offered Yearly.

Restriction(s): Enrollment is limited to Graduate level students.

NFS 5530 Supervised Practice III Cr. 3

Supervised practice is in clinical (acute care), long-term care, food service, community, and an elective setting. Students may be placed in various SP experiences in any for the NFS 5510-5530 courses; each course is not a specific type of SP. Placements will be based on site availability. Offered Yearly.

Restriction(s): Enrollment is limited to Graduate level students.

NFS 5540 Supervised Practice IV Cr. 3

Supervised practice is in clinical (acute care), long-term care, food service, community, and an elective setting. Students may be placed in various SP experiences in any for the NFS 5500-5530 courses; each course is not a specific type of SP. Placements will be based on site availability. Offered Yearly.

Restriction(s): Enrollment is limited to Graduate level students.

NFS 5990 Honors Directed Study Cr. 1-4

Offered for undergraduate credit only. Offered Every Term.

Restriction(s): Enrollment is limited to students with a major in Nutrition and Food Science Hon; enrollment is limited to Undergraduate level students.

Repeatable for 6 Credits

NFS 5992 Supervised Field Experience Cr. 2-4

Supervised field experience designed to correlate classroom theory with practical work. Offered Every Term.

NFS 5996 Research in Food Science and Nutrition Cr. 1-4

Research projects under direction of faculty active in research. Offered for undergraduate credit only. Offered Every Term.

Restriction(s): Enrollment limited to students with a class of Unranked Undergrad, Freshman, Sophomore, Junior or Senior; enrollment is limited to Undergraduate level students.

Repeatable for 6 Credits

NFS 6000 Nutritional Biochemistry Cr. 3

Biochemical effects of nutrients at cellular and organ levels. Offered for graduate credit only. Offered Fall.

Restriction(s): Enrollment is limited to Graduate level students.

NFS 6020 Nutrient and Gene Interaction Cr. 3

Introduction to molecular genetics concepts, terminology and molecular methodologies, with emphasis on nutrition and food science. Overview of nutrition and gene interaction in onset and progression of disease, cancer, and aging. Offered for graduate credit only. Offered Every Other Year.

Prerequisites: NFS 5130 with a minimum grade of C-, NFS 5140 with a minimum grade of C-, and NFS 5230 with a minimum grade of C-

Restriction(s): Enrollment is limited to Graduate level students.

NFS 6030 Microbiological Safety of Foods Cr. 3

Food-borne microorganisms as causes of human illnesses, including bacteria, mold, viruses and parasites. Microbial toxins and their mode of action. Antimicrobial agents in food. Means of prevention and protection. Offered Fall.

Prerequisites: NFS 4150 with a minimum grade of C- and NFS 5130 with a minimum grade of C-

NFS 6150 Functional Foods for Health Cr. 3

Introduction to functional foods (those with specific health benefits) and nutraceuticals, as well as a variety of functional food ingredients and extracts, their chemical and potential health promoting properties, processing, production, safety and regulation. Offered Winter.

Prerequisite: NFS 2030 with a minimum grade of D- and NFS 2130 with a minimum grade of D- and NFS 3230 with a minimum grade of D-

Restriction(s): Enrollment is limited to Graduate level students.

NFS 6210 Nutrition through the Life Cycle Cr. 3

Biological growth and nutritional requirements from fetal stages of development through aging. Nutritional standards in light of current epidemiological data and scientific research. Offered for graduate credit only. Offered Intermittently.

Prerequisites: NFS 5230 with a minimum grade of C

Restriction(s): Enrollment is limited to Graduate level students.

NFS 6230 Nutrition and Physical Performance Cr. 3

How nutrients affect physical fitness and physical performance; how physical performance can be improved by adopting optimal dietary practice and how exercise and optimal nutrition can prevent human diseases. Offered Fall.

NFS 6270 Eating Behavior and Body Weight Regulation Cr. 3

Central and peripheral regulation of food intake, normal and abnormal eating behavior, physiological and psychological regulation of body weight, different models of obesity, etiology of treatment of obesity. Offered Winter.

Prerequisite: BIO 2870 with a minimum grade of C-

NFS 6850 Controversial Issues Cr. 2

Topics to be announced in Schedule of Classes. Offered Fall.

Prerequisite: NFS 3230 with a minimum grade of C

NFS 6860 Controversial Issues in Clinical Nutrition and Dietetics Cr. 2

Current controversial topics; differing points of view will be debated; discussion of modes of communication of nutrition information. Offered Winter.

Prerequisite: NFS 5200 with a minimum grade of B-

Restriction(s): Enrollment is limited to students with a major in Dietetics; enrollment limited to students in the BS in Dietetics or PBC in Dietetics programs.