

NUTRITION & FOOD SCIENCE (NUFD)

NUFD 130 Introduction to Nutrition and Food Science Profession (1 credit)

An introductory course which provides general information about nutrition and food science fields and acquaints students with professional requirements and opportunities.

NUFD 150 Food Composition and Scientific Preparation (3 credits)

An introduction to food science, nutrition and food preparation with emphasis on scientific principles involved in the characteristics of acceptable standardized products and product evaluation. Satisfies Gen Ed - Interdisciplinary Studies requirement; satisfies SEEDS Scientific Reasoning student learning outcome in alignment with Educated Citizenry value.

NUFD 153 Dynamics of Food and Society (3 credits)

This course is designed to give students an opportunity to explore issues of food consumption through a study of: basic nutrition requirements; social/psychological factors influencing food behaviors; food acquisition through history as compared to contemporary situations; the impact on the ecological system in the quest for food; and the social, economical, and political aspects of the world food situation and potential means of alleviating the problems of hunger and nutrient deficiencies. Satisfies Social Science Perspective GenEd requirement; satisfies SEEDS Analyzing Cultures and Societies student learning outcome in alignment with Diversity and Intercultural Competency value. Meets World Cultures Requirement.

NUFD 182 Nutrition: A Socioecological Perspective (3 credits)

This course provides an overview of the science of human nutrition from a socioecological perspective. The key functions, sources, and recommended allowances of all major and minor nutrients are reviewed, along with a discussion of the personal, social, cultural, environmental, and political factors that may influence an individual's daily food choices and eating behaviors. Students also learn to evaluate the impact of nutrition research on our nation's current nutrition education policies and programs. May not take NUFD 182 if NUFD 192 has been successfully completed. Satisfies SEEDS Analyzing Cultures and Societies student learning outcome in alignment with Social Justice and Equity value.

NUFD 192 Nutrition with Laboratory (4 credits)

This course is designed to provide students with a general understanding of the components of the food we eat and the nutrients necessary for life. The functions of nutrients, their interrelationships, digestion, absorption and metabolism of nutrients are discussed. The factors, such as age, gender, ethnicity, physical activity, and environmental factors, which influence food intake and requirements of nutrients, are covered. Students learn to measure and evaluate their nutritional status and body composition using equipment used in laboratory and analyze their diets using computer software. They plan meals considering individual's nutritional requirements in the laboratory. Historical, national, and international issues regarding food and nutrition are presented. May not take NUFD 192 if NUFD 182 has been successfully completed. Satisfies Natural Science Lab GenEd requirement; satisfies SEEDS Scientific Reasoning student learning outcome in alignment with Self Discovery and Self Care value.

NUFD 202 Food in World History (3 credits)

This course examines the role of food in shaping world history from ancient times through the modern era. The course will be framed around crucial transitions in food history such as the neolithic agricultural revolution, the Columbian Exchange, and globalization. Using the lens of food history and culinary cultures this course will examine the connections and exchanges within historical events and related issues such as empire, migration, race, class, gender, religion, power, identity, and the environment. Mutually Exclusive with HIST 202.

NUFD 240 Sanitation Management and Food Microbiology: Certification (1 credit)

Food safety for effective food service management. Understanding of Sanitation Risk Management, microbial food contaminants, and food safety regulations. Students will be entitled to take the "ServSafe Food Protection Manager Certification" examination.

NUFD 255 Meal Design and Management (3 credits)

Prerequisite(s): NUFD 182 or NUFD 192; and NUFD 240 may be taken as prerequisite or corequisite. Current health insurance and negative PPD test required. In this course, students learn about the design and analysis of meals for individuals and families, giving special emphasis to therapeutic nutrition and economic needs balanced with current lifestyles. Students also learn about principles involved in meal management and practice those in class labs.

NUFD 258 Experimental Food Science (3 credits)

Prerequisite(s): NUFD 150. Study of the theory and applications of the chemical and physical changes involved in food processing, storage and preparation through objective and subjective analytical techniques.

NUFD 270 Nutrition for Fitness (3 credits)

Prerequisite(s): NUFD 182 or NUFD 192. This course is designed to provide students a basic understanding of the role nutrition plays in enhancing one's health, fitness, and sport performance. Current research and practical activities are incorporated throughout. Students will learn the principles of healthy eating and its application to exercise for health and athletic performance. An enhanced discussion of the latest dietary trends for improvement of performance, such as ketogenic diets, plant-based proteins, and nutrient timings, will also be included in this course. Mutually Exclusive with EXSC 270.

NUFD 285 Nutrition in Chronic Disease Prevention (3 credits)

Prerequisite(s): NUFD 182 or NUFD 192. This course uses a systems approach to understand the role of nutrition in influencing chronic disease outcomes among adults. The course focuses on five specific organ systems (immune, circulatory, skeletal, endocrine, and excretory) and their role in influencing risks to diseases such as cancer, heart disease, osteoporosis, overweight/obesity, diabetes, and hypertension. The functions and metabolism of the major nutrients related to these diseases will be discussed in detail. Finally, the course will use an applied format (case studies) to help students demonstrate a basic knowledge of how reliable nutrition information is derived from scientific research, and be able to discern facts from fallacy in diet-related issues. Utilizing this knowledge, they will be able to work with community-based agencies in developing initiatives that help various population groups make healthier food choices and prevent chronic disease risks more effectively.

NUFD 286 Gender in Food and Nutrition Issues (3 credits)

This course will provide students with an interdisciplinary foundation with which to understand gender identity and difference as they relate to the food system and nutrition-related behavior. Students will learn how to critically examine gender-related issues in the food system by applying perspectives from a variety of disciplines in the social sciences. They will use these perspectives to create gender-sensitive food and nutrition interventions. May be repeated for a maximum of 9 credits.

NUFD 295 Nutrition and Physical Activity for Older Adults (3 credits)

Prerequisite(s): NUFD 182 or NUFD 192. The course introduces students to the essential principles of good nutrition and physical activity for healthy aging. Students learn to understand how balancing calorie intake with calorie expenditure can contribute to a healthier aging process and promote quality of life among older adults. A review of the current public health policies, programs and partnerships that promote good health and prevent disease and injury among the elderly in the United States is also presented.

NUFD 299 Professional Development for Careers in Nutrition, Food Science and Wellness (3 credits)

Prerequisite(s): NUFD 130. This course is designed to equip students in the Nutrition and Food Science program with the skills necessary to make a successful transition to careers in their chosen profession. Students will research and identify career options, write career plans, develop: networking and communication skills, and create a professional i portfolio. Particular emphasis will be placed on creating a goals-based roadmap to secure an internship placement.

NUFD 300 Fundamentals of Healthy Cuisine (3 credits)

Prerequisite(s): NUFD 240. This course introduces students to the basic principles of developing and preparing recipes using healthier ingredients and techniques. The course primarily focuses on how to create healthy recipes and then develop culinary strategies necessary to prepare them. Lessons learned enable students to adapt traditional dishes that are healthier and yet tasteful, flavorful and targeted to today's health conscious consumers. Principles of food safety and strategies to meet the cultural preferences of an individual are emphasized. The course features lecture and hands-on laboratory experiences. Offered as NUFD 300 through SUMMER 2024. To become NUFD 426 effective FALL 2024.

NUFD 310 International Cultures and Cuisines (3 credits)

Prerequisite(s): NUFD 240. Restriction(s): Applied Nutrition and Food Science majors with concentration in Food Systems. This course provides an in-depth examination of the food cultures and cooking styles of North and South America, Africa, Europe, and Asia. Rather than focusing on one specific area, students will become familiar with the food history and customs, traditional ingredients, flavor principles, culinary techniques, and meal planning principles that are indigenous to each of the afore-mentioned regions. Through lectures and hands-on preparation of signature dishes in the Food Service lab UN 4011, students will obtain a holistic understanding of how traditional food customs and traditions may influence an individual's daily food choices, and ultimately, their overall health and nutritional status.

NUFD 353 Catering and Banquet Management (3 credits)

Prerequisite(s): NUFD 240 or HSET 390. Current health insurance and negative PPD test are required. This course is designed for those who need to know how food is prepared and then served in a catered or banquet setting. Students learn how to select and determine costs of catered food, plan a catered banquet and various culturally influenced serving styles.

NUFD 358 Principles of Food Science (3 credits)

Prerequisite(s): CHEM 113 and NUFD 150; or departmental approval. This course provides advanced knowledge in food science, with an emphasis on scientific aspects of modern industrial food supply systems. Basic principles in food composition, processing, and preservation, as well as impact of processing techniques on the aesthetic and nutritional qualities of food products are discussed.

NUFD 376 Quantity Food Purchasing and Production (3 credits)

Prerequisite(s): NUFD 240. Determining needs, purchasing, storing, preparing and serving food in large volume. Equivalent course NUFD 253 effective through Summer 2024.

NUFD 381 Applied Nutrition in the Lifecycle (3 credits)

Prerequisite(s): NUFD 192; NUFD 270 or EXSC 270 for Sports Nutrition minor only. The application of basic nutrition knowledge to individuals in various life stages. Analysis of the physiological, biochemical, psychological and social factors that affect nutrient needs throughout the lifecycle.

NUFD 382 Advanced Nutrition (4 credits)

Prerequisite(s): CHEM 270; and BIOL 243 may be taken as prerequisite or corequisite. The physiological and chemical bases for nutrient needs, mechanisms through which nutrients meet the biological needs of humans, evaluation and interpretation of research findings.

NUFD 383 Applied Community Nutrition (3 credits)

Prerequisite(s): NUFD 192; and NUFD 381 may be taken as prerequisite or corequisite. Restriction(s): Dietetics concentration. This service learning course provides a comprehensive overview of the impact of federal and state legislation on community nutrition service, dietetics practice, and health care within the United States. Students learn about the Nutrition Care Process, which is a systematic approach to providing quality nutrition care consisting of four distinct, interrelated steps entailing nutrition assessment, diagnosis, intervention, and monitoring/evaluation. The course demonstrates the application of this process. Nutrition informatics-the intersection of information, nutrition, and technology-is also presented. Students complete 20 hours of community service in a local community service placement aligned with their course objectives.

NUFD 387 Edible Innovations: Emerging Food Technologies (3 credits)

Prerequisite(s): NUFD 240. Current health insurance and negative PPD test required. This course focuses on current gastronomic trends, utilizing innovative scientific approaches to food production. The course includes combining classical cooking techniques with state-of-the-art methods, deconstruction of recipes and scientific preparation of edible foods. Lessons learned will enable students to critically assess traditional food combinations to open up creative avenues of thinking for future food production and presentation strategies. The course features lectures and hands-on laboratory experiences.

NUFD 388 Nutrition for Community Fitness Programs (3 credits)

Prerequisite(s): NUFD 285 may be taken as prerequisite or corequisite; NUFD 270 or EXSC 270 must be taken as a prerequisite for Sports Nutrition minor only. This course introduces students to the key nutritional principles that are essential for maintaining physical fitness. The course also examines the impact of current legislation, policies, programs and partnerships that make churches, schools, colleges and universities, worksites, parks and recreation facilities, and other wellness centers and commercial gyms to become vibrant centers for attaining optimum nutritional health and physical fitness. Through lectures, class activities and a culminating project, students are encouraged to make the important and practical connection between diet and exercise, and to think critically about ways that public health nutritionists can promote physical activity at local, state and national levels.

NUFD 398 Dietetics Professional Seminar (3 credits)

Prerequisite(s): NUFD 130. Restriction(s): Junior or senior standing; restricted to Nutrition and Food Science majors with concentration in Dietetics. A course providing skills necessary for beginning professionals in dietetics. Equivalent course NUFD 490 effective through Summer 2024.

NUFD 399 Medical Nutrition Applications (3 credits)

Prerequisite(s): NUFD255; and NUFD381 and NUFD382 may be taken as a prerequisite or corequisite. Provides an overview of the concepts, principles and methodology for nutrition assessment. Emphasis is placed on practical application and case models. Equivalent course NUFD 499 effective through Summer 2024.

NUFD 403 Planning and Evaluating Programs (3 credits)

Prerequisite(s): NUFD 383. This course aims to educate students on the basic principles of delivering a multi-dimensional wellness program model that includes nutrition as one of its core components. Through case studies and direct interaction with professionals in the field, the student understands the underlying theory as well as techniques in planning and evaluating successful wellness programs in a variety of environments. Students work in a group to design and evaluate a mock nutrition-based wellness program for a target population in a corporate or a community setting. Equivalent course NUFD 390 effective through SUMMER 2024.

NUFD 404 Introduction to Research (3 credits)

Prerequisite(s): STAT 109; and any 200-level NUFD course. Restriction(s): Junior or senior standing. A study of the basic concepts, principles and methodologies of scientific research and their application to the investigation of research problems in health, nutrition, and food science.

NUFD 409 Internship in Nutrition and Food Science (3 credits)

Prerequisite(s): NUFD 299 or NUFD 358. Restriction(s): Junior standing or minimum of 24 credits in major; Nutrition and Food Science majors only. Opportunity to work as an intern in a professional setting related to food management, nutrition or dietetics related profession. Application available from advisor.

NUFD 410 Policy and Advocacy for Nutrition Based Wellness Programs (3 credits)

Prerequisite(s): Any 200-level NUFD course. This course investigates the major federal agencies and programs, and the vehicles by which they contribute to creating these policies and promoting the nation's overall health are reviewed in detail. Through assigned readings and case studies, students understand how a food or nutrition policy is created, advocated for, and influenced by the public, health practitioners, lobbyists, and legislators. In particular, the United States Department of Agriculture's role on creating, implementing and evaluating a nutrition policy will help illustrate the complexity of that role in fulfilling the current challenges of public health nutrition.

NUFD 411 Managing Programs (3 credits)

Prerequisite(s): Any 200-level NUFD course. This course provides a comprehensive overview of the concepts and principles of managing nutrition-based wellness programs. An emphasis is placed on reviewing the techniques and strategies for managing personnel, budget, and resources of programs within a community or corporate setting. Equivalent course NUFD 395 effective through Summer 2024.

NUFD 412 Nutrition Education Techniques (3 credits)

Prerequisite(s): NUFD 381. Restriction(s): Junior or Senior standing. Procedures and techniques for developing programs and teaching nutrition to a variety of target populations. Individual and group methods emphasize innovation. Field studies.

NUFD 426 Fundamentals of Healthy Cuisine (3 credits)

Prerequisite(s): NUFD 240. This course introduces students to the basic principles of developing and preparing recipes using healthier ingredients and techniques. The course primarily focuses on how to create healthy recipes and then develop culinary strategies necessary to prepare them. Lessons learned enable students to adapt traditional dishes that are healthier and yet tasteful, flavorful and targeted to today's health conscious consumers. Principles of food safety and strategies to meet the cultural preferences of an individual are emphasized. The course features lecture and hands-on laboratory experiences. Equivalent course NUFD 300 effective through SUMMER 2024.

NUFD 436 Sensory Evaluation of Foods (3 credits)

Prerequisite(s): NUFD 358. An upper level Food Science course that addresses the knowledge and skills needed to assess food quality and consumer acceptance via use of the human senses. The students will follow step by step procedures to learn how to evaluate food sensory characteristics such as appearance, color, flavor, odor, texture, and choices via sensory methods and techniques. Students will apply sensory testing methods and statistical methods in evaluating food quality. The course features lectures and hands-on laboratory experiences. Equivalent course NUFD 377 effective through Fall 2020.

NUFD 446 Food Processing and Preservation (3 credits)

Prerequisite(s): NUFD 358. An upper level Food Science course in which students learn about and apply food processing and preservation principles and methods. Covered topics include emerging technologies for processing, packaging, and preserving foods and beverages, the appropriate use of food processing equipment, and quality assessment techniques for food processing and preservation. Students will gain experience in the application and determination of appropriate food processing techniques. The course features lectures and hands-on laboratory experiences. Equivalent course NUFD 367 effective through Fall 2020.

NUFD 450 Quantity Food Applications (3 credits)

Prerequisite(s): NUFD 240. Capstone lecture and laboratory experiences to support basic concepts of quantity food purchasing and production. Students will learn hands-on skills to produce culinary products in large quantities. Laboratory assignments in the MSU Food Management laboratory and in functioning food service facilities off campus.

NUFD 452 Organization and Management of Foodservice Systems (3 credits)

Prerequisite(s): Any 200-level course. Restriction(s): Junior or Senior standing. Principles of management, organizational structure, policy and decision-making. The menu in management, budgeting and cost control, sanitation and safety, personnel policies and management. Meets the Graduation Writing Requirement for majors in Nutrition and Food Science.

NUFD 456 Research in Foods (3 credits)

Prerequisite(s): NUFD 358. An upper level Food Science course covering the design and execution of experimental food science studies and the interpretation of results. The course features lectures and hands-on laboratory experiences.

NUFD 465 Urban Agriculture and Sustainable Food Systems (4 credits)

Prerequisite(s): Any 200-level course; or department approval.

Restriction(s): Junior or Senior Status. In this service-learning course students will provide state-of-the-art urban-agriculture guidance generated from the current literature. They will propose and then assess novel agricultural approaches for cultivating food in an urban environment. Students will gain hands-on experience in urban agriculture, including garden planning, growing and harvesting vegetables, and designing garden-based lesson plans. Students will gain a foundation in agro-ecology and community agriculture development approaches. They will critically assess the role urban agriculture plays in creating sustainable food systems and community empowerment.

NUFD 466 Food Product Development (3 credits)

Prerequisite(s): NUFD 358. Restriction(s): Junior or Senior standing. An upper level Food Science course in which students learn to integrate knowledge and skills from previous food science and nutrition courses to develop new, nutritious, safe and sensory acceptable food products. The course features lectures and hands-on laboratory experiences.

NUFD 468 Sports Nutrition (3 credits)

Prerequisite(s): Any 300-level course. In this course students will acquire knowledge of the nutrition needs of highly active individuals, competitive athletes and those who participate in high intensity structured exercise regimens. Examined topics include the role of nutrition in enhancing fitness and athletic performance, maintenance of lean tissue integrity, prevention of excessive fatigue and optimization of training adaptations.

NUFD 470 Special Topics in Nutrition and Food Science (1-3 credits)

Prerequisite(s): Any 200-level course or departmental approval.

This course provides students with the opportunity to expand their professional preparation and expertise about selected topics in nutrition and food science not covered in other undergraduate courses. These topics will be based on significant, emerging nutrition and food problems and issues, on new scientific developments and discoveries pertinent to the nutrition and food science professions. May be repeated for a maximum of 9 credits if topics are different.

NUFD 473 Food Regulations and Compliances (3 credits)

Prerequisite(s): Any 200-level course. This course will cover the legal and regulatory compliances of food and dietary supplement products in the United States. Topics will cover issues such as food and food safety regulation, regulatory compliance, Hazard Analysis Critical Control Points (HACCP), International Standards Organization (ISO), the regulation of Genetically Modified Organisms (GMOs), food additives, food labeling, dietary supplements and, more recently, the protection of the food supply from bio or chemo terrorism or "food security."

NUFD 476 Food Ethics, Sustainability and Alternatives (3 credits)

Prerequisite(s): Any 200-level course; or departmental approval. This course addresses the moral, ethical and environmental impacts of food consumption for historical, contemporary and future populations. Students will discuss and assess production practices including cage-free and confined animal husbandry and slaughter, dairy production, farming, genetically modified foods and food alternatives. Moral eating decisions, religious proscriptions, forbidden foods, veganism and vegetarianism and food waste reduction policies, will be assessed for their influence on food consumption as well as environmental impacts. Arguments on the ethics of individual, cultural and societal food choices will be presented, including the role of meat, seafood, poultry and dairy in ethical and sustainable food systems as well as the rationale behind eating plant-based diets. Students will learn how consumption practices affects health, the future of the planet, the welfare of animals, and national and global security.

NUFD 477 Social Marketing in Nutrition (3 credits)

Prerequisite(s): NUFD 381. This course examines the applications of social marketing in the design, implementation, and evaluation of nutrition education programs. Social marketing is an audience-centered approach that focuses on multiple, reinforcing channels of communication along with environmental changes to influence behavior. Highlights of social marketing will be presented in light of its usefulness and applicability to nutrition education.

NUFD 482 Nutrition Counseling (3 credits)

Prerequisite(s): NUFD 381 or NUFD 395. Restriction(s): Junior or Senior Standing. This course offers practical experience dealing with the principles of marketing, adult learning, helping skills, assessment, documentation, and evaluation as related to weight control and the role of food in promotion of a healthy lifestyle. Six hours of clinical experience is required.

NUFD 488 Medical Nutrition Therapy I (3 credits)

Prerequisite(s): NUFD 382 and NUFD 399. This course enables students to apply nutrition science to the prevention and treatment of human diseases and medical conditions. Nutrition assessment, diet modification, and specialized nutrition support, such as enteral and parenteral feeding, are covered.

NUFD 492 Food Systems and Agribusiness Issues (3 credits)

Prerequisite(s): Any 200-level course or departmental approval. Restriction(s): Junior or Senior status. This course provides an in-depth examination of production systems, processes and the distribution networks for food. Critical emphasis is placed on the current agribusiness model through examination of the impacts of government and politics on food systems emanating from the farm, through processing and distribution. Students will assess, critique and propose agribusiness strategies and policies. Text, required readings, current events, guest speakers, and current journal articles are utilized in the course as the means to explore and evaluate the current agribusiness model, alternatives, and regulatory and policy influences. Equivalent course NUFD 392 effective through Spring 2021.

NUFD 494 Concepts of the Sommelier (3 credits)

Prerequisite(s): Any 200-level course or HSET 390; departmental approval. Restriction(s): Must be over 21 years old. This course provides an overview of the wine producing regions of the world and the elements of wine appreciation and service. Students participate in several tasting sessions in which they analyze wine through three sensory attributes: appearance, smell and palate sensation. Through blind tasting and sensory deduction, the students learn to compare and contrast wine quality and flaws. The students learn to recognize the diversity of the world of wine production by studying variables such as grape variety, climate, soil, and local approaches to grape growing and wine making. Additionally, students apply the principles of the wine service. Equivalent course NUFD 405 effective through Summer 2024.

NUFD 496 Special Topics in Health and Wellness (3 credits)

Prerequisite(s): Any 200-level NUFD course. This course allows students to focus on health and wellness issues. Students will learn how to critically assess upcoming issues through scholarly readings and seminars given by faculty and visiting professionals.

NUFD 501 Principles of Nutrition (3 credits)

Restriction(s): Nutrition and Food Science MS students only. Topics include advanced study of the biochemical and physiological aspects of human nutrition with emphasis on vitamins, minerals, lipids, protein, carbohydrates, water and energy. Students that have taken NUFD 382 may not take NUFD 501.

NUFD 505 Research in Nutrition and Food Science (3 credits)

Restriction(s): Nutrition and Food Science MS majors only. Designed to provide basic research and statistical literacy so that students can develop a research proposal in its entirety in nutrition and food science.

NUFD 506 Research and Evaluation in Nutrition and Food Science (3 credits)

Prerequisite(s): NUFD 505 may be taken as prerequisite or corequisite. Restriction(s): Nutrition and Food Science MS majors only. This course gives students a foundation in the design of research in Nutrition and Food Science, and in the analysis of research data in these fields. Students develop knowledge and skills for identifying appropriate techniques for analyzing data, performing nutrition/food science data analyses, and reporting on the results in a format suitable for publication in an academic journal. This course provides hands-on experience with statistical package. SPSS hands on exercises.

NUFD 508 Independent Study in Nutrition and Food Science (1-3 credits)

Prerequisite(s): Departmental approval. An opportunity to study in-depth areas of nutrition and food science which are not offered in the regular curriculum. May be repeated for a maximum of 3 credits as long as the topic is different.

NUFD 509 Research Seminar (3 credits)

Prerequisite(s): NUFD 505 and NUFD 506. Restriction(s): Nutrition and Food Science MS majors only. Carrying out a research study on specific problems of limited scope. Work to be taken in nutrition and food science.

NUFD 511 Advanced Managing Programs (3 credits)

This course provides an advanced and comprehensive overview of the concepts and principles of managing nutrition-based wellness programs. An emphasis is placed on reviewing the techniques and strategies for managing personnel, budget, and resources of programs within a community or corporate setting. Students that have taken NUFD 411 may not take NUFD 511.

NUFD 526 Advanced Fundamentals of Healthy Cuisine (3 credits)

This course covers the basic and advanced principles of developing and preparing nutritious foods. The course focuses on how to create healthy recipes and then develop culinary strategies necessary to prepare them. Lessons learned enable students to adapt traditional dishes that are healthier and yet tasteful, flavorful and targeted to today's health conscious consumers. Principles of food safety and strategies to meet the cultural preferences of an individual are emphasized. The course features lecture and hands-on laboratory experiences. Students that have taken NUFD 426 may not take NUFD 526.

NUFD 533 Medical Nutrition Therapy II (3 credits)

Corequisite(s): NUFD 534. Prerequisite(s): NUFD 488. Restriction(s): Admission into the MS in Nutrition and Food Science-Dietetics concentration. Medical Nutrition Therapy II is an extension of Medical Nutrition Therapy I that provides students with opportunities to implement evidence-based plans and utilize the Nutrition Care Process to treat increasingly more complex human diseases and medical conditions. The course content consists of lectures, individual case studies and related activities to reinforce lecture concepts. Course assessments consist of exams, individual and group-based case study assignments, and a final case study presentation and report based on an actual patient. This course will continue to reinforce the didactic scientific concepts of nutrition science, anatomy, pathophysiology, and biochemistry while mastering the ability to apply them to complex patient-based clinical situations.

NUFD 534 Acute Clinical Supervised Experiential Learning in Dietetics (4 credits)

Corequisite(s): NUFD 533. Prerequisite(s): NUFD 488. Restriction(s): Admission into the MS in Nutrition and Food Science-Dietetics concentration. This course provides supervised experiential learning and precepted field experiences to students in clinical dietetics. These experiences will take place in healthcare settings such as acute care hospitals. Under supervision, students will apply their didactic knowledge and utilize evidence-based guidelines to inform clinical practice to meet the needs of individuals, groups, and populations. Under supervision students will perform the Nutrition Care Process and provide medical nutrition therapy and nutrition care for diverse individuals and groups with various acute and chronic medical conditions. Students will develop knowledge, skills, and abilities needed to work in the area of clinical nutrition in an acute care setting.

NUFD 536 Advanced Sensory Evaluation (3 credits)

A graduate-level Food Science course that covers the knowledge and skills needed to assess food quality and consumer acceptance via use of the human senses at an advanced level. The students will be responsible for implementing step by step procedures for the evaluation of food sensory characteristics such as appearance, color, flavor, odor, texture, and choices via sensory methods and techniques. Students will apply sensory testing methods and statistical methods in evaluating food quality. The course features lectures and hands-on laboratory experiences. BS/MS students that have taken NUFD 436 may not take NUFD 536.

NUFD 546 Advanced Food Processing and Preservation (3 credits)

A graduate-level Food Science course in which students learn about and apply food processing and preservation principles and methods. Covered topics include emerging technologies for processing, packaging, and preserving foods and beverages, the appropriate use of food processing equipment, and quality assessment techniques for food processing and preservation. Students will gain experience in the application and determination of appropriate food processing techniques. The course features lectures and hands-on laboratory experiences. BS/MS students that have taken NUFD 446 may not take NUFD 546.

NUFD 550 Advanced Quantity Food Applications (3 credits)

Restriction(s): Nutrition and Food Science BS/MS majors and Academy of Nutrition & Dietetics students only. In this course students will acquire and integrate knowledge and skills in quantity food production including: menu development, recipe development and scaling, nutritional analysis, safe and sanitary food handling, production timing and constraints, flow of good from inception through execution and financial analysis of the outcome (total cost, cost per portion, etc.).

NUFD 556 Advanced Research in Foods (3 credits)

A graduate-level Food Science course covering the design and execution of experimental food science studies and the interpretation of results. The course features lectures and hands-on laboratory experiences. BS/MS students that have taken NUFD 456 may not take NUFD 556.

NUFD 557 Food Safety (3 credits)

Restriction(s): Nutrition and Food Science MS majors only. This course is offered for those who must understand food sanitation and safety for effective food management and production. The course emphasizes the understanding of food safety and food sanitation risk management and microbial food contaminants as it encompasses changing federal and state compliance regulations including Hazard Analysis Critical Control Point (HACCP), good manufacturing practices and Safe, Sanitary Operational Procedures (SSOP).

NUFD 560 Advanced Nutrition Counseling for Diverse Population Groups (3 credits)

Restriction(s): Nutrition and Food Science MS majors only. Topics include ethnic variations in health care beliefs; culturally sensitive nutrition counseling skills, developmental skills and dietary behaviors of children, adolescents and aging adults and nutrition counseling approaches for these age groups. Six hours of nutrition counseling clinical experience required.

NUFD 561 Non-Acute Clinical Supervised Experiential Learning in Dietetics (4 credits)

Corequisite(s): NUFD 560. Prerequisite(s): NUFD 488. Restriction(s): Admission into the MS in Nutrition and Food Science-Dietetics concentration. This course provides supervised experiential learning and precepted field experiences to students in clinical dietetics. These experiences will take place in healthcare settings such as subacute, long term care, and rehabilitation facilities, ambulatory care settings, healthcare clinics, private practices, retail settings, and/or wellness programs. Under supervision, students will apply their didactic knowledge and utilize evidence-based guidelines to inform clinical practice to meet the needs of individuals, groups and populations. Under supervision, students will perform the Nutrition Care Process and provide medical nutrition therapy and nutrition care for diverse individuals and groups with various medical conditions and nutritional needs throughout the lifecycle. As part of this experience, students will develop the knowledge, skills, and abilities needed to work in the area of clinical nutrition in a variety of practice settings.

NUFD 565 Advanced Urban Agriculture and Sustainable Food Systems (4 credits)

In this service-learning course, graduate students will provide state-of-the-art urban-agriculture guidance generated from the current literature. They will propose and then assess novel agro-ecological approaches for cultivating food in an urban environment. Students will gain hands-on experience in urban agriculture, including garden planning, growing and harvesting vegetables, and designing garden-based lesson plans. While gaining a foundation in agro-ecology and community development approaches, students will critically assess the role urban agriculture plays in creating sustainable food systems and promoting community empowerment.

NUFD 566 Advanced Food Product Development (3 credits)

Restriction(s): Nutrition and Food Science MS majors only. A graduate-level Food Science course in which students learn to integrate knowledge and skills from previous food science and nutrition courses to develop new, nutritious, safe and sensory acceptable food products at an advanced level. The course features lectures and hands-on laboratory experiences. BS/MS students that have taken NUFD 466 may not take NUFD 566.

NUFD 568 Advanced Sports Nutrition (3 credits)

In this course students will acquire advanced knowledge of the nutrition needs of highly active individuals, competitive athletes and those who participate in high intensity structured exercise regimens. Examined topics include the role of nutrition in enhancing fitness and athletic performance, maintenance of lean tissue integrity, prevention of excessive fatigue and optimization of training adaptations. BS/MS students that have taken NUFD 468 may not take NUFD 568.

NUFD 570 Special Topics in Nutrition and Food Science (1-3 credits)

Restriction(s): Nutrition and Food Science MS majors only. This course provides students with the opportunity to expand their professional preparation and expertise about selected topics in nutrition and food science not covered in other graduate courses. These topics will be based on significant, emerging nutrition and food problems and issues and on new scientific developments and discoveries pertinent to the nutrition and food science professions. Such issues could include sports nutrition, nutrition in complementary care, environmental nutrition, advanced clinical nutrition, research methodology, gerontology nutrition, and sustainable food systems. May be repeated for a maximum of 9 credits if topics are different.

NUFD 573 Advanced Food Regulations and Compliances (3 credits)

Restriction(s): Nutrition and Food Science MS majors only. This course will provide an in-depth understanding of the legal and regulatory compliances of food and dietary supplement products in the United States. Topics will cover issues such as food and food safety regulation, regulatory compliance, Hazard Analysis Critical Control Points (HACCP), International Standards Organization (ISO), the regulation of Genetically Modified Organisms (GMOs), food additives, food labeling, dietary supplements and, more recently, the protection of the food supply from bio or chemo terrorism or "food security." BS/MS students that have taken NUFD 473 may not take NUFD 573.

NUFD 576 Advanced Food Ethics, Sustainability and Alternatives (3 credits)

This course examines how ethical, moral, behavioral and economic choices on food consumption are made within the food system. Students will critically reflect on the social and cultural values that define which foods are permissible or forbidden, have high or low status or have environmental impact. Arguments for vegetarian and vegan diets, eating organic, eating local, and eating humanely raised and slaughtered animals will be presented and debated. Issues concerning individual food choices and cultural practice, sustainable food production and food waste reduction and food policy will be deliberated and actions regarding how food is grown, processed, marketed, sold, and consumed will be assessed. Alternative food processing methods will be critically analyzed for efficacy and ethicality in contemporary future production and consumption models. Policies for the meat, poultry, seafood, dairy and produce industries will be analyzed, developed or repositioned. BS/MS students that have taken NUFD 476 may not take NUFD 576.

NUFD 577 Advanced Social Marketing in Nutrition (3 credits)

Restriction(s): Nutrition and Food Science MS majors only. Social Marketing in Nutrition course entails a comprehensive view of the applications of social marketing in the design, implementation, and evaluation of nutrition education programs. Social marketing is an audience-centered approach that focuses on multiple, reinforcing channels of communication along with environmental changes to influence behavior. Highlights of social marketing will be presented in light of its usefulness and applicability to nutrition education.

NUFD 580 Current Applications in Nutrition (3 credits)

Restriction(s): Nutrition and Food Science MS majors only. This course enables students to develop detailed and in-depth knowledge of recent findings in human nutrition and to apply this knowledge by learning how to write a grant application for funding. Emphasis is placed on the critical review and analysis of recent developments in nutrition research and developing a successful proposal.

NUFD 581 Nutrition Education (3 credits)

Restriction(s): Nutrition and Food Science MS majors only. This course is designed to provide students with skills for developing, implementing, evaluating and funding nutrition education programs for populations with various demographic characteristics.

NUFD 584 Community Supervised Experiential Learning in Dietetics (2 credits)

Corequisite(s): NUFD 560. Prerequisite(s): NUFD 403, NUFD 581, NUFD 590. Restriction(s): Admission into the MS in Nutrition and Food Science-Dietetics concentration. This course provides supervised experiential learning and precepted field experiences to students in community nutrition and dietetics. These experiences will take place in community settings and public health programs. Under supervision, students will apply their didactic knowledge and utilize evidence-based guidelines to provide nutrition services and promote community wellness to diverse individuals, groups, and populations through a variety of activities, programs, and services.

NUFD 587 Practicum (3 credits)

Prerequisite(s): 18 500-level NUFD credits. Restriction(s): Nutrition and Food Science MS majors only; departmental approval. This practicum provides students in nutrition, food science and food management with planned supervised experiences in a variety of selected business, agencies or organizations offering nutrition education or food-related services. Students engage in experiential and in-class work at a specific corporate setting, agency or organization, depending on their professional goals and previous experiences. They work productively with business, agencies and/or organizations for a total of 90 hours.

NUFD 588 Organizational Behavior in Food Businesses (3 credits)

Restriction(s): Nutrition and Food Science MS majors only. In this course, students critically assess principals of management currently being used in the food industry. In doing so they learn novel approaches to organizational structure and policy and decision-making in the manufacturing, retail restaurant and institutional food sectors. Students analyze food systems and the economic and production activities of food businesses by using economic theories and case studies. Students that have taken NUFD 452 may not take NUFD 588.

NUFD 590 Nutrition Policy (3 credits)

Restriction(s): Nutrition and Food Science MS majors only. This course introduces students to theories, models, and analytic frameworks for understanding the dynamics of policy making and evaluation processes that address nutrition policy problems. Students develop a project for evaluating policy decision-making, outcomes and impacts. Case studies are used as a teaching tool to underscore policy lessons, facilitate small group discussion, and introduce students to several policy initiatives (i.e., School Meal Programs, Food stamps, Special Supplemental Nutrition Program for Women, Infants and Children).

NUFD 591 Project Management and Leadership in Dietetics (3 credits)

Corequisite(s): NUFD 593. Prerequisite(s): NUFD 588. Restriction(s): Admission into the MS in Nutrition and Food Science-Dietetics concentration. At the conclusion of this course students will have demonstrated competence in the development and implementation of a food or nutrition-related project while managing risk and cost, using project management strategies and processes. Additionally, students will demonstrate an understanding of current management methods: six sigma, lean six sigma, agile Kaizen, and Total Quality Management.

NUFD 592 Advanced Food Systems and Agribusiness Issues (3 credits)

In this course graduate students will assess, critique and propose agribusiness strategies and policies. Students will engage in an in-depth examination of production systems, processes and the distribution networks for food. Critical emphasis is placed on the current agribusiness model thorough examination of the impacts of government and politics on food systems emanating from the farm, through processing and distribution. Students that have taken NUFD 492 may not take NUFD 592.

NUFD 593 Food Service and Management Supervised Experiential Learning in Dietetics (2 credits)

Corequisite(s): NUFD 591. Prerequisite(s): NUFD 240, NUFD 550, NUFD 588. Restriction(s): Admission into the MS in Nutrition and Food Science-Dietetics concentration. This course provides supervised experiential learning and precepted field experiences to students in the areas of food service and management. These experiences will take place in food service settings such as healthcare facilities, schools, retail, and/or corporate settings. Under supervision, students will apply food systems principles and management skills to ensure safe and efficient delivery of food and water for diverse populations. As part of this experience, students will develop knowledge, skills, and abilities needed to work in the area of food service and management of food and nutrition programs. Students will also demonstrate leadership, business, and management principles to guide practice and achieve operational goals.

NUFD 594 Advanced Concepts of the Sommelier (3 credits)

Prerequisite(s): Department approval required. Restriction(s): Must be over 21 years old. This course provides an overview of the wine producing regions of the world and the elements of wine appreciation and service. Students participate in several tasting sessions in which they analyze wine through three sensory attributes: appearance, smell and palate sensation. Through blind tasting and sensory deduction, the students learn to compare and contrast wine quality and flaws. The students learn to recognize the diversity of the world of wine production by studying variables such as grape variety, climate, soil, and local approaches to grape growing and wine making. Additionally, students apply the principles of the wine service. Students will expectorate the wines they taste. Students must be over 21 years old to enroll in this course.

NUFD 595 Principles of Food Science (3 credits)

Restriction(s): Nutrition and Food Science MS majors only. This course provides students with advanced knowledge in food science, giving them in-depth exposure to key elements of this growing field of study. Students learn about principles and processes in chemistry and microbiology that are essential to work in food science. They explore the processing of food and food products. They examine concepts of food preservation, the packaging and marketing of foods and global food issues.

NUFD 668 Nutrition Assessment (3 credits)

Prerequisite(s): Departmental approval. Restriction(s): Dietetic Internship students only. This course covers the systematic principles and comprehensive steps of human nutrition assessment. This includes screening of nutritional status, planning nutrition intervention as well as implementation and evaluation of nutrition intervention processes. The tools and techniques used in nutrition assessment will be utilized by the students in this course. May be repeated for a maximum of 6 credits.

NUFD 698 Master's Thesis (4 credits)

Prerequisite(s): Departmental approval. Independent research project done under faculty advisement. Students must follow the MSU Thesis Guidelines, which may be obtained from the Graduate School. Students should take NUFD 699 if they don't complete NUFD 698 within the semester.

NUFD 699 Master's Thesis Extension (1 credit)

Prerequisite(s): NUFD 698. Continuation of Master's Thesis Project.

Thesis Extension will be graded as IP (In Progress) until thesis is completed, at which time a grade of Pass or Fail will be given.