

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. 1 hour lecture.

NUFD 150 - Food Composition and Scientific Preparation **3 Credits**

Prerequisite(s): NUFD 130 may be taken as prerequisite or corequisite.

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. Meets Gen Ed - Interdisciplinary Studies. 1 hour lecture, 3 hours lab.

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. Meets Gen Ed - Social Science Perspectives. Meets World Cultures Requirement. 3 hours lecture.

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. Meets GenEd 2002 - Social Science Perspective. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 192 - Nutrition with Laboratory **4 Credits**

Prerequisite(s): NUFD 130 may be taken as prerequisite or corequisite.

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. Meets Gen Ed - Natural Science Laboratory. May not take NUFD 192 if NUFD 182 has been successfully completed. 3 hours lecture, 2 hours lab.

NUFD 240 - Sanitation Management and Food Microbiology: Certification **1 Credit**

Prerequisite(s): NUFD 150 or HOSP 250. 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. May be repeated for a maximum of 3 credits. 1 hour lecture.

NUFD 253 - Quantity Food Purchasing and Production **3 Credits**

Prerequisite(s): NUFD 182 or NUFD 192. Determining needs, purchasing, storing, preparing and serving food in large volume. 3 hours lecture.

NUFD 254 - Foodservice Equipment and Facilities Design **3 Credits**

Prerequisite(s): NUFD 150 and NUFD 253. Facilities layout and design. Selection of equipment based on design criteria. Purchasing standards and procedures. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 255 - Meal Design and Management **4 Credits**

Prerequisite(s): NUFD 150; and 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. May be repeated for a maximum of 12 credits. 3 hours lecture, 1.5 hours lab.

NUFD 258 - Experimental Food Science **3 Credits**

Prerequisite(s): NUFD 150; and NUFD 182 or NUFD 192. 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. May be repeated for a maximum of 9 credits. 1 hour lecture, 3 hours lab. Previous course NUFD 357 effective through Spring 2018.

NUFD 284 - Global Perspectives in Food and Nutrition **3 Credits**

Prerequisite(s): NUFD 182 or NUFD 192. This course introduces students to food and nutrition problems globally. Through class lectures and projects, students examine the significance that cultural variations have on nutrition and food-related development interventions and projects around the world. Special attention is paid to the problem of nutrition transition (the double burden of obesity and undernutrition) occurring in our globalizing world. May be repeated for a maximum of 9 credits. Previous course NUFD 384 effective through Spring 2017. 3 hours lecture.

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. 3 hours lecture.

NUFD 286 - Gender in Food and Nutrition Issues 3 Credits

Prerequisite(s): NUFD 153 or NUFD 182 or NUFD 192. 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. 3 hours lecture.

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. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 299 - Professional Development for Careers in Nutrition, Food 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. May be repeated for a maximum of 9 credits. 3 hours lecture.

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. Laboratory fee. May be repeated for a maximum of 9 credits. 2 hours lecture, 2 hours lab. Previous course NUFD 175 effective through Spring 2018.

NUFD 310 - International Cultures and Cuisines 3 Credits

Prerequisite(s): NUFD 240. 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 aforementioned 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. Previous course NUFD 110 effective through Spring 2017. 2 hours lecture, 1.5 hours lab.

NUFD 353 - Catering and Banquet Management 3 Credits

Prerequisite(s): NUFD 240 or HOSP 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. May be taken for a maximum of 9 credits. 3 hours lecture.

NUFD 358 - Principles of Food Science 3 Credits

Prerequisite(s): CHEM 113 and NUFD 258. Students will learn basic principles of Food Science with emphasis on food processing and the chemical, physical and biological reactions occurring in food that affect nutritional, sensory and safety during processing and storage. This course is appropriate for students in the Food Science concentration and well as Food Systems, Biology, Chemistry and Health Sciences. May be repeated for a maximum of 9 credits. 3 hours lecture. Previous course NUFD 257 effective through Spring 2018.

NUFD 360 - Urban Agriculture and Sustainable Food Systems 4 Credits

Prerequisite(s): NUFD 240 or NUFD 253 or NUFD 258 may be taken as prerequisite or corequisite. In this service-learning course, students 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 agroecology and community development approaches, students critically assess the role urban agriculture plays in creating sustainable food systems and promoting community empowerment. By participating in a service-learning field experience, students develop a place-based understanding of the potentials and challenges confronting urban agriculture. May be repeated for a maximum of 12 credits.

NUFD 367 - Fundamentals of Food Processing and Preservation 3 Credits

Prerequisite(s): NUFD 258. Students learn general food processing and preservation principles and methods. They learn about 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 visit food processing facilities where they have hands-on experiences of the food processing principles learned in the class. Course activities include reading and analyzing scenarios that demonstrate the food scientist's role in the Integration and application of food processing and preservation concepts, principles, and skills in solving real-world food science problems. 3 hours lecture.

NUFD 377 - Sensory Evaluation of Foods 3 Credits

Prerequisite(s): NUFD 258. This course is an upper level Food Science course within the Nutrition and Food Science major. It expands and builds on previous food science courses and is designed to integrate and increase knowledge and skills in determining 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 learn various sensory testing methods and statistical methods in evaluating food quality. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 381 - Applied Nutrition in the Lifecycle 3 Credits

Prerequisite(s): NUFD 258 may be taken as prerequisite or corequisite. Special fee. 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. 3 hours lecture. Previous course NUFD 282 effective through Spring 2018.

NUFD 382 - Advanced Nutrition**4 Credits**

Prerequisite(s): CHEM 270; and NUFD 258 and BIOL 243 may be taken as a prerequisite or a 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. May be repeated for a maximum of 12 hours. 4 hours lecture.

NUFD 383 - Applied Community Nutrition**3 Credits**

Prerequisite(s): NUFD 258 may be taken as prerequisite or corequisite; Dietetics concentration. This course provides a comprehensive overview of the impact of federal and state legislation on community nutrition services, 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. This course may be repeated for a maximum of 9 credits. 3 hours lecture. Previous course NUFD 292 effective through Spring 2018.

NUFD 387 - Molecular Cuisine**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. 2 hours lecture and 2 hours lab.

NUFD 388 - Nutrition for Community Fitness Programs**3 Credits**

Prerequisite(s): NUFD 285 may be taken as prerequisite or corequisite. 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, classactivities 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. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 390 - Planning and Evaluating Programs**3 Credits**

Prerequisite(s): NUFD 285 may be taken as prerequisite or corequisite. 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. 3 hours lecture.

NUFD 392 - Food Systems and Agribusinesses Issues**3 Credits**

Prerequisite(s): NUFD 253 or NUFD 285 may be taken as prerequisite or corequisite. This course provides an introductory examination of the systems of production, processes, and distribution of food throughout the food chain. The course places particular critical emphasis on the current agribusiness model through the examination of the role and impact of government and politics in food processes and distribution. 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. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 394 - Non Profit Management in Nutrition and Food**3 Credits**

Prerequisite(s): NUFD 240 or NUFD 253 or NUFD 258 may be taken as prerequisite or corequisite. This course is designed to equip students in the Nutrition and Food Science program with the background they need to become involved in the non-profit sector. Students learn essential aspects of non-profit management, such as organizational development, fundraising, and managing volunteers. Particular emphasis is placed on non-profits in the food, nutrition and wellness sectors. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 395 - Managing Programs**3 Credits**

Prerequisite(s): NUFD 285 may be taken as prerequisite or corequisite. 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. May be taken for a maximum of 9 credits. 3 hours lecture.

NUFD 404 - Introduction to Research**3 Credits**

Prerequisite(s): MATH 109; and NUFD 381 may be taken as prerequisite or corequisite; 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. May be taken for a maximum of 9 credits. 3 hours lecture. Previous course NUFD 304 effective through Spring 2017.

NUFD 405 - Concepts of the Sommelier**3 Credits**

Prerequisite(s): NUFD 381 or HOSP 390; must be over 21 years old; departmental approval. 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. May be repeated for a maximum of 9 credits. 2 hours lecture, 2 hours lab.

NUFD 409 - Internship in Nutrition and Food Science**3 Credits**

Prerequisite(s): NUFD 299 and NUFD 381; 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. May be repeated for a maximum of 9 credits. 2 hours lecture, 2 hours other.

NUFD 410 - Policy and Advocacy for Nutrition Based Wellness Programs 3 Credits

Prerequisite(s): NUFD 395 may be taken as prerequisite or corequisite. 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. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 412 - Nutrition Education Techniques 3 Credits

Prerequisite(s): NUFD 381 or NUFD 395; 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. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 450 - Quantity Food Applications 3 Credits

Prerequisite(s): NUFD 240 and NUFD 253; and NUFD 381 or HOSP 390 may be taken as prerequisite or corequisite. Students must provide proof of current health insurance coverage and a negative PPD test. Junior or senior standing. 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. May be repeated for a maximum of 9 credits. 2 hours lecture, 2 hours lab. Previous course NUFD 350 effective through Spring 2018.

NUFD 452 - Organization and Management of Foodservice Systems 3 Credits

Prerequisite(s): NUFD 381 may be taken as prerequisite or corequisite; and 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 University Writing Requirement for majors in Nutrition and Food Science. 3 hours lecture. Previous course NUFD 352 effective through Spring 2018.

NUFD 456 - Research in Foods 3 Credits

Prerequisite(s): NUFD 358. Scientific method in the design and execution of experimental food studies and in the interpretation and evaluation of results. Independent laboratory research. 1 hour lecture, 3 hours lab.

NUFD 466 - Food Product Development 3 Credits

Prerequisite(s): NUFD 367; and Junior or Senior standing. In this course students will learn to integrate knowledge and skills from previous food science and nutrition courses to develop new, nutritious, safe and sensory acceptable food products. Students will develop oral and written reports that will document information on current food trends, shelf life stability, nutrition labeling, quality assurance parameters, marketing, sensory evaluation, and packaging of food products. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 470 - Selected Topics in Nutrition and Food Science 1-3 Credits

Prerequisite(s): NUFD 304 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 once for a maximum of 6.0 credits.

NUFD 482 - Nutrition Counseling 3 Credits

Prerequisite(s): NUFD 304 or NUFD 395; and NUFD 412 may be taken as prerequisite or corequisite. 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. May be repeated for a maximum of 9 hours. 3 hours lecture.

NUFD 488 - Medical Nutrition Therapy 4 Credits

Prerequisite(s): NUFD 382. 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. May be repeated for a maximum of 12 credits. 4 hours lecture.

NUFD 489 - Externship in Food and Nutrition 3 Credits

Prerequisite(s): NUFD 253 and NUFD 382. A supervised experience in selected quantity food services, agencies, clinics or organizations involved in foods and nutrition problems of the community. 4 hours lecture.

NUFD 490 - Nutrition and Food Science Professional Seminar 1 Credit

Prerequisite(s): NUFD 130 and NUFD 381; Restricted to Nutrition and Food Science majors with concentration in Dietetics. A capstone course which provides skills necessary for beginning professionals in nutrition and food science fields. May be repeated for a maximum of 3 credits. 1 hour seminar.

NUFD 496 - Selected Topics in Advanced Culinary Techniques 1-3 Credits

Prerequisite(s): NUFD 310. Corequisite(s): NUFD 450. This course allows students to focus on prescient food and culinary issues that affect food production now and in the future. Students will learn how to critically assess upcoming issues through scholarly readings and seminars given by faculty and visiting professionals. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 499 - Medical Nutrition Applications 3 Credits

Prerequisite(s): NUFD 382; and NUFD 488 may be taken as prerequisite or corequisite. Provides an overview of the concepts, principles and methodology for nutrition assessment. Emphasis is placed on practical application and case models. 3 hours lecture.

NUFD 501 - Principles of Nutrition 3 Credits

Topics include advanced study of the biochemical and physiological aspects of human nutrition with emphasis on vitamins, minerals, lipids, protein, carbohydrates, water and energy. 3 hours lecture.

NUFD 505 - Research in Nutrition and Food Science 3 Credits

Prerequisite(s): NUFD 501; and NUFD 506 may be taken as prerequisite or corequisite. Designed to provide basic research and statistical literacy so that students can develop a research proposal in its entirety in nutrition and food science. 3 hours lecture. Previous course NUFD 507 effective through Spring 2018.

NUFD 506 - Research and Evaluation in Nutrition and Food Science**3 Credits**

Prerequisite(s): NUFD 505 may be taken as prerequisite or corequisite. 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. 3 hours lecture with 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 6.0 credits as long as the topic is different. 3 hours lecture.

NUFD 509 - Research Seminar**3 Credits**

Prerequisite(s): NUFD 507. Carrying out a research study on specific problems of limited scope. Work to be taken in nutrition and food science. 3 hours seminar.

NUFD 550 - Advanced Quantity Food Applications**3 Credits**

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.). May be repeated for a maximum of 9 hours. 2 hours lecture, 2 hours lab.

NUFD 557 - Food Safety**3 Credits**

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). 3 hours lecture.

NUFD 560 - Advanced Nutrition Counseling for Diverse Population Groups**3 Credits**

Prerequisite(s): NUFD 501 may be taken as prerequisite or corequisite. 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. 3 hours lecture.

NUFD 566 - Advanced Food Product Development**3 Credits**

In this course students will acquire and integrate knowledge and skills in food science to understand the process of developing new, nutritious, safe, and desirable food products. Students will develop oral and written reports that will document information on current food trends, shelf life stability, nutrition labeling, quality assurance parameters, marketing, sensory evaluation, and packaging of food products. May be repeated for a maximum of 9 credits. 3 hours lecture.

NUFD 570 - Selected Topics in Nutrition and Food Science**1-3 Credits**

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. 1 hours lecture.

NUFD 572 - Food Systems: Politics and Ecology**3 Credits**

In this course, students engage in a comprehensive examination of the systems of production, processes, and distribution of food throughout the food chain. They give particular attention to critically examining the agribusiness model through analysis of the role and impact of government and politics in food processes and distribution. To enhance their understanding of the competing ideologies and micro and macro food economic concepts and effects, students explore current events and learn from guest speakers as well as reading current journal articles. 3 hours lecture.

NUFD 573 - Food and Nutrition Regulations and Compliances**3 Credits**

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." 3 hours lecture.

NUFD 577 - Social Marketing in Nutrition**3 Credits**

Prerequisite(s): NUFD 501 may be taken as prerequisite or corequisite. 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. 3 hours lecture.

NUFD 580 - Current Applications in Nutrition**3 Credits**

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. 3 hours lecture.

NUFD 581 - Nutrition Education**3 Credits**

Prerequisite(s): NUFD 501 may be taken as prerequisite or corequisite. This course is designed to provide students with skills for developing, implementing, evaluating and funding nutrition education programs for populations with various demographic characteristics. 3 hours lecture.

NUFD 583 - Nutritional Aspects of Food Processing and Handling**3 Credits**

Prerequisite(s): NUFD 501 may be taken as prerequisite or corequisite. A course designed to study the theory and practice of evaluating food processing from a nutritional standpoint and to compare food availability with the effects that various kinds of processing have on nutrient content. This course is appropriate for graduate students and selected seniors in food and nutrition, food service management, biology, chemistry, and health sciences. 3 hours lecture.

NUFD 585 - Food and Nutrition Issues**3 Credits**

Prerequisite(s): NUFD 501 may be taken as prerequisite or corequisite. An investigation of current issues in food and nutrition with an emphasis on consumer, food industry, government and professional perspectives. 3 hours lecture.

NUFD 587 - Practicum**3 Credits**

Prerequisite(s): NUFD 501 and NUFD 595. 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. 1 hour lecture, 3 hours practicum.

NUFD 588 - Organizational Behavior in Food Businesses**3 Credits**

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. 3 hours lecture.

NUFD 590 - Nutrition Policy**3 Credits**

Prerequisite(s): Graduate Standing. 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). 3 hours lecture.

NUFD 595 - Principles of Food Science**3 Credits**

Prerequisite(s): A college level chemistry course or permission of instructor. 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. 3 hours lecture.

NUFD 668 - Nutrition Assessment**3 Credits**

Prerequisite(s): NUFD 501 or departmental approval. 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. 3 hours lecture.

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.