

Nutrition and Food Sciences (NFS)

See Department of Nutrition, Dietetics, and Food Sciences, [click here](#)

NFS 1000 Food Science from Farm to Fork 3
Explores the science and technology of food, including careers, disciplines, food commodities, food product development, and the future of food science. (F)^{DE}

NFS 1020 BLS Science and Application of Human Nutrition 3
Role of dietary choices in providing nutrients and their relationship to the social, mental, and physical well-being of people. How to evaluate nutritional status with personal data using computer diet analysis program. (F,Sp,Su)^{DE}

NFS 1050 Food Safety Manager Certification 0.5
Covers food safety information required by the Utah Food Safety Manager Certification Act. Includes role of food handlers in controlling food-borne disease, time-temperature, employee hygiene, sanitation methods, preventing contamination from time of purchase to time of serving, food service facilities/equipment, and HACCP. Graded Pass/Fail only. (F,Sp,Su)^{DE}

NFS 1240 Culinary Basics 3[®]
Develops fundamental skills specific to culinary arts. Investigates principles of ingredients and preparation methods. Practice provided in knife skills and cooking methods. Explores the effects of cooking on food quality. Enrollment limited to Nutrition and Food Sciences majors, Family and Consumer Sciences majors, and Family and Consumer Sciences Education majors only. (F,Sp)

NFS 1250 Sanitation and Safety 3
Principles of sanitation and safety applied to food operations. Emphasizes personal hygiene habits and food handling practices that protect the health and safety of employees and consumers. (Sp)^{DE}

NFS 2020 Nutrition Throughout the Life Cycle 3
Application of nutrition principles to the human life cycle: nutrient functions, needs, sources, and alterations during pregnancy, lactation, growth, development, maturation, and aging. Prerequisite: NFS 1020. (Sp)

NFS 2040 Introduction to Biotechnology 1
Introduces freshmen to the emerging field of biotechnology and the impact this technology has on society. Also taught as ADVS 2040, BIOL 2040, and PSC 2040. (Sp)

NFS 3020 Nutrition and Physical Performance 2
Includes information on macro/micronutrient metabolism during exercise, specific problems experienced by athletes or highly active persons, myths, ergogenic aids, and current interests. Prerequisite: NFS 1020. (F)

NFS 3070 Science of Food Preparation 4
Science principles underlying modern food theory and practice. Relation of physical and chemical properties of food components and their systems to food preparation. Prerequisite: CHEM 1120 or 2300 or 2310. (Sp)

NFS 3100 QI Sensory Evaluation of Food 3
Design and implementation of sensory testing of foods. Emphasizes physiology of senses, testing methods, statistical analysis, and taste panel experience. Prerequisite: STAT 3000. (Sp)

NFS 3110 DSC Food, Technology, and Health 3
Impact of food technology on food spoilage, food preservation, food quality, and foodborne diseases. Basic processing operations and regulations ensuring a safe food supply. Prerequisite: University Studies Breadth Life Sciences (BLS) course. (F)^{DE}

NFS 3600 Medical Terminology for Health Care Professionals 1
Internet-based course teaches medical terminology by focusing on medical word-building rules, prefixes, suffixes, and whole-body terminology related to human body systems. Also includes coverage of anatomy, pathological conditions, and diagnostic treatments and procedures. (F,Sp)^{DE}

NFS 4020 Advanced Nutrition 3
Structures, properties, and metabolism of protein, lipids, carbohydrates, vitamins, and minerals. Includes digestion, absorption, hormonal control, cellular biochemistry, metabolic interrelationships, excretion, etc. Prerequisites: NFS 1020, CHEM 3700, BIOL 2420. (F)

NFS 4040 Dairy Foods 4
Explores manufacture of various dairy foods, including pasteurized milk, UHT milk, cream, cheddar cheese, cottage cheese, process cheese, yogurt, butter, and milk and whey powders. Three lectures and one lab. Prerequisite: Enrollment in Animal, Dairy and Veterinary Sciences major. (F)

NFS 4050 CI Education and Counseling Methods in Dietetics I 2
Principles of education, counseling, and communication as applied to the field of nutrition education and clinical dietetics practice. Prerequisite: Junior level in Coordinated or Didactic Program in Dietetics. Corequisite: NFS 4550. (F)

NFS 4060 CI Education and Counseling Methods in Dietetics II 2
Continuation of NFS 4050. Prerequisite: NFS 4050. Corequisite: NFS 4560. (Sp)

NFS 4420 QI Nutrition Research Methodology 2
Development of experimental design, data collection, statistical analysis, interpretation, and presentation of results. Clinical, community, and management data analysis. Interpretation and presentation, including bench marking, cost/benefit analysis, and continuous quality improvement projects. Enrollment limited to seniors within the Coordinated Program in Dietetics (CPD) or Didactic Program in Dietetics (DPD). Prerequisites: STAT 1040, MATH 1050. (Sp)

NFS 4440 QI Fundamentals of Food Engineering 4
Engineering concepts taught in a fundamental sense and applied to food processing. Concepts include: general problem solving techniques, material and energy balances, fluid dynamics, heat transfer, refrigeration, and kinetics of common biological processes used in food preparation. Prerequisite: PHYS 2110. (F)

NFS 4450 Clinical Nutrition I Lab 1
Supplement to NFS 4550. Explores application of nutrition care process to medical case studies. (F)

NFS 4460 Clinical Nutrition II Lab 1
Supplement to NFS 4560. Explores application of nutrition care process to medical case studies. (Sp)

NFS 4480 Community Nutrition 3
Introduction to public health nutrition, food programs, and national nutrition monitoring. Prerequisite: NFS 1020. (F)

NFS 4550 Nutrition Assessment/Clinical Nutrition I 4
Introduction to the profession of dietetics, assessment of nutrition status, and nutrition care planning. Pathophysiology of disease states and applied medical nutrition therapy. Prerequisite: CHEM 3700. Enrollment restricted to Nutrition and Food Sciences majors only. (F)

NFS 4560 CI Clinical Nutrition II 4
Continuation of NFS 4550. Prerequisite: NFS 4550. (Sp)

NFS 4570 Clinical Nutrition Experience I 1
Practical experience in health care facilities. Integration and application of material learned in NFS 4550. Corequisite: NFS 4550. Prerequisite: Acceptance into Coordinated Program in Dietetics. (F)

NFS 4580 Clinical Nutrition Experience II 2
Continuation of NFS 4570. Corequisite: NFS 4560. Prerequisite: NFS 4570. (Sp)

NFS 4660 CI Medical Dietetics 12
In-depth study of nutrition relationships in disease development and treatment with clinical experience in medical facilities in Salt Lake City. Prerequisites: NFS 4550, 4560, 4570, 4580. (F)

NFS 4710 Quantity Food Preparation 2
Principles of food preparation applied to large quantity production, menu planning, food selection, storage, and equipment. Prerequisites: NFS 1240, 1250, and 3070. (F)

Course Descriptions

<p>NFS 4720 QI Food Service Organization and Management 2 Principles of organization, management theory, financial controls, human and labor relations, employee training, layout, and sanitation. Prerequisite: NFS 4710. (Sp)</p> <p>NFS 4730 Quantity Food Preparation Lab 2 Practical experience in quantity food preparation. Integration and application of NFS 4710. Corequisite: NFS 4710. Prerequisites: NFS 1240 and acceptance into Coordinated Program in Dietetics. (F)</p> <p>NFS 4740 Food Service Organization and Management Lab 2 Practical experience in food service management. Integration and application of NFS 4720. Prerequisite: NFS 4730. Corequisite: NFS 4720. (Sp)</p> <p>NFS 4750 Management of Dietetics 3 Principles of management in dietetics and current practice issues. Prerequisite: Must be enrolled in final year in Coordinated Program in Dietetics (CPD) or Didactic Program in Dietetics (DPD). (Sp)</p> <p>NFS 4780 CI Maternal and Child Nutrition 3-4 Normal and clinical nutritional requirements in pregnancy, lactation, and pediatrics. To be taken in Salt Lake City in conjunction with NFS 4660 or by Didactic Program in Dietetics (DPD) students in their final year. (F)</p> <p>NFS 4900 Special Problems 1-4[®] Individual problems and research problems in Nutrition and Food Sciences. (F,Sp,Su)</p> <p>NFS 4990 Nutrition and Food Sciences Seminar 1 Senior student paper and presentation on current topics in nutrition and food sciences. Prerequisite: Senior in NFS. (Sp)</p> <p>NFS 5020 Meat Technology and Processing 4 (dual listing 6020) Emphasizes understanding the conversion of muscle to meat, fabrication of carcasses into primal and retail cuts, and principles underlying manufacture of processed meats. (F)</p> <p>NFS 5030 Dairy Technology and Processing 4 (dual listing 6030) Covers biochemistry, microbiology, and technology of milk processing. Includes heat processing, fat separation, homogenization, concentration, drying, fermentation, freezing, and manufacture of dairy foods such as pasteurized milk, UHT milks, ice cream, cheeses, and yogurt. Prerequisites: NFS 5110/6110, 5560/6560. (F)</p> <p>NFS 5110 CI Food Microbiology 4 (dual listing 6110) Microorganisms in food spoilage, poisoning, preservation, and sanitation. Prerequisite: BIOL 2060 or 3300. (Sp)</p> <p>NFS 5150 Clinical Nutrition Practice 1 Reinforces principles of medical nutrition therapy for preparation of dietetic internships. Includes detailed discussion of nutrition care process and its application in clinical settings. Reviews charting methods, education techniques, and various disease states commonly treated. Prerequisites: NFS 4550, 4560. Taught Pass/Fail only. (Sp)</p> <p>NFS 5160 Methods in Biotechnology: Cell Culture 3 Techniques and fundamental knowledge for culturing mammalian and insect cells. Students will learn maintenance, growing, genetic engineering of cells, cytotoxicity, hybridoma creation, cloning, etc. Extensive laboratory experience is provided. Also taught as ADVS 5160, BIOL 5160, and PSC 5160. (Sp)</p> <p>NFS 5170 Principles of Food Safety and Food Quality Assurance 3 (dual listing 6170) Explores modern issues and programs of safety and quality assurance used in the food industry, including Good Manufacturing Practices (GMP), sanitation, Hazard Analysis and Critical Control Points (HACCP), and Safe Quality Food (SQF). Prerequisite: NFS 5110. (Su)</p>	<p>NFS 5200 Nutritional Epidemiology 2 (dual listing 6200) Introduction to epidemiologic methods and their application to the study of nutrition, human health, and disease. Useful for students with career interests in nutrition, food sciences, dietetics, human health sciences, veterinary sciences, biology, public health, anthropology, social work, and public policy. Prerequisites: STAT 1040, NFS 1020. (F)</p> <p>NFS 5210 Advanced Public Health Nutrition 2 (dual listing 6210) Effects of diet on development and prevention of disease. Conditions of public health significance, including birth defects, coronary heart disease, hypertension, stroke, Alzheimer's disease and other causes of dementia, cancer, osteoporosis, diabetes, and international health problems. Discussion of health concerns of minority populations, cross-cultural studies, government policy, and establishment of dietary recommendations. Prerequisites: STAT 1040 or higher, CHEM 3700 or higher. (Sp)</p> <p>NFS 5220 Endocrine Aspects of Nutrition 2 (dual listing 6220) Provides physiological background into hormones involved in nutrient regulation, as well as mechanisms of hormone action at the cellular and molecular levels. Includes action of steroids in the nucleus and membrane-based signal transduction pathways. Course includes lectures and literature reviews/presentations. Prerequisite: CHEM 3700 or permission of instructor. Also taught as ADVS 5220/6220 and BIOL 5220/6220. (Sp)</p> <p>NFS 5250 Occupational Experiences in Nutrition and Food Sciences 1-3[®] On-the-job training. (F,Sp,Su)</p> <p>NFS 5260 Methods in Biotechnology: Molecular Cloning 3 Laboratory-oriented course designed to teach molecular biology techniques such as DNA cloning, genetic probes, polymerase chain reaction, and DNA sequencing. Prerequisite: CHEM 3700 or 5710; or BIOL 3060; or permission of instructor. Also taught as ADVS 5260, BIOL 5260, and PSC 5260. (F)</p> <p>NFS 5300 Advanced Micronutrient Nutrition 3 (dual listing 6300) Explores the function, interaction, and practical significance of micronutrients in human metabolism and the ability of the diet to meet these needs. Relates nutrient biochemical functions to specific deficiency symptoms. Prerequisite: NFS 4020. (Sp)</p> <p>NFS 5410 Nutrient Gene Interactions 3 (dual listing 6410) Focuses on molecular interactions between nutrients and mechanisms of gene expression, including transcriptional regulation, post-transcriptional regulation, and epigenetics. Emphasizes nutrient/gene interactions involved in the etiology or prevention of chronic disease, such as cancer, cardiovascular disease, and metabolic syndrome. Prerequisite: CHEM 3700. (Sp)</p> <p>NFS 5420 Molecular Nutrition Laboratory 2 (dual listing 6420) Explores modern molecular nutrition techniques for determining the influence of nutrients on gene regulation. Focuses on modern techniques commonly used in the field of molecular nutrition, including cell culture, mRNA isolation and quantification, western blotting, promoter cloning/mutation, and nutrient/trans factor interactions. (Sp)</p> <p>NFS 5500 QI Food Analysis 4 (dual listing 6500) Application and theory of physical, chemical, and instrumental techniques for determination of composition and quality of food. Prerequisite: NFS 5560/6560. (Sp)</p> <p>NFS 5510 Food Laws and Regulations 2 (dual listing 6510) Provides background of federal/state laws and regulations and case law history affecting food production, processing, packaging, marketing, and distribution of food products. (Sp)</p>
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<p>NFS 5560 Food Chemistry 4 (dual listing 6560) Chemical structure, properties, reactions, and interactions of the important chemical constituents of food. Prerequisites: CHEM 3700 and 3710, or NFS 3070. (F)</p> <p>NFS 5610 Food and Bioprocess Engineering 3 (dual listing 6610) Standardization and compounding of biomaterials and food products; preservation processing using heat, refrigeration, concentration, and dehydration. Basic unit operations in the bioprocessing industry. Prerequisite: BIE 3200. Also taught as BIE 5610/6610. (F)</p> <p>NFS 5750 Advanced Dietetics Practicum 1-6 (dual listing 6750) Advanced dietetics practicum in clinical nutrition, community nutrition, food service management, or research. Prerequisite: Must be enrolled in final year in Coordinated Program in Dietetics (CPD) or Didactic Program in Dietetics (DPD). (F,Sp,Su)</p> <p>NFS 5830 International Nutrition: Macronutrients 3 (dual listing 6830) Explores principles and roles of macronutrients in causing malnutrition influencing health, survival, and developmental capacity of populations, especially in developing societies. Discussion of approaches implemented at household, community, national, and international levels to improve nutritional status. (F)</p> <p>NFS 5920 CI Food Product Development 3 Capstone course that incorporates and unifies the principles of food chemistry, microbiology, engineering, processing, nutrition, sensory analysis, and statistics. Prerequisite: Senior standing. (F)</p> <p>NFS 6020 Meat Technology and Processing 4 (dual listing 5020) Emphasizes understanding the conversion of muscle to meat, fabrication of carcasses into primal and retail cuts, and principles underlying manufacture of processed meats. (F)</p> <p>NFS 6030 Dairy Technology and Processing 4 (dual listing 5030) Covers biochemistry, microbiology, and technology of milk processing. Includes heat processing, fat separation, homogenization, concentration, drying, fermentation, freezing, and manufacture of dairy foods such as pasteurized milk, UHT milks, ice cream, cheeses, and yogurt. Prerequisites: NFS 6110/5110, 6560/5560. (F)</p> <p>NFS 6050 Community Public Health Internship I 3 Supervised school nutrition education internship in elementary and secondary public schools developing child nutrition programs. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)^{DE}</p> <p>NFS 6060 Community Public Health Internship II 3 Supervised public health nutrition internship with state and district supplemental food program for women, infants, and children. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)^{DE}</p> <p>NFS 6100 Sensory Evaluation of Foods 3 Methods and practice in the sensory evaluation of foods. Testing facilities/ environment, statistical design, testing method selection, and data interpretation. Prerequisite: STAT 3000 or permission of instructor. (Sp)</p> <p>NFS 6110 Food Microbiology 4 (dual listing 5110) Microorganisms in food spoilage, poisoning, preservation, and sanitation. Prerequisite: BIOL 2060 or 3300. (Sp)</p> <p>NFS 6170 Principles of Food Safety and (dual listing 5170) Food Quality Assurance 3 Explores modern issues and programs of safety and quality assurance used in the food industry, including Good Manufacturing Practices (GMP), sanitation, Hazard Analysis and Critical Control Points (HACCP), and Safe Quality Food (SQF). Prerequisite: NFS 5110. (Su)</p>	<p>NFS 6200 Nutritional Epidemiology 2 (dual listing 5200) Introduction to epidemiologic methods and their application to the study of nutrition, human health, and disease. Useful for students with career interests in nutrition, food sciences, dietetics, human health sciences, veterinary sciences, biology, public health, anthropology, social work, and public policy. Prerequisites: STAT 1040, NFS 1020. (F)</p> <p>NFS 6210 Advanced Public Health Nutrition 2 (dual listing 5210) Effects of diet on development and prevention of disease. Conditions of public health significance, including birth defects, coronary heart disease, hypertension, stroke, Alzheimer's disease and other causes of dementia, cancer, osteoporosis, diabetes, and international health problems. Discussion of health concerns of minority populations, cross-cultural studies, government policy, and establishment of dietary recommendations. Prerequisites: STAT 1040 or higher, CHEM 3700 or higher. (Sp)</p> <p>NFS 6220 Endocrine Aspects of Nutrition 2 (dual listing 5220) Provides physiological background into hormones involved in nutrient regulation, as well as mechanisms of hormone action at the cellular and molecular levels. Includes action of steroids in the nucleus and membrane-based signal transduction pathways. Course includes lectures and literature reviews/ presentations. Prerequisite: CHEM 3700 or permission of instructor. Also taught as ADVS 6220/5220 and BIOL 6220/5220. (Sp)</p> <p>NFS 6250 Clinical Nutrition Internship I 4 Supervised clinical nutrition experience including medical, geriatric, long-term care, and oncology. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)^{DE}</p> <p>NFS 6260 Clinical Nutrition Internship II 4 Supervised clinical nutrition experience including nutrition support, renal, pediatrics, intensive care units, outpatient care, and clinical staff experience. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)^{DE}</p> <p>NFS 6300 Advanced Micronutrient Nutrition 3 (dual listing 5300) Explores the function, interaction, and practical significance of micronutrients in human metabolism and the ability of the diet to meet these needs. Relates nutrient biochemical functions to specific deficiency symptoms. Prerequisite: NFS 4020. (Sp)</p> <p>NFS 6350 Food Service Systems Management Internship I 6 Supervised school food service internship. Includes purchasing, inventory control, food service, and food production. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)^{DE}</p> <p>NFS 6360 Food Service Systems Management Internship II 6 Supervised school food service internship. Includes administration and food service staff supervision experience. Prerequisite: Acceptance into USU Extension Dietetic Internship Program. (F,Sp,Su)^{DE}</p> <p>NFS 6410 Nutrient Gene Interactions 3 (dual listing 5410) Focuses on molecular interactions between nutrients and mechanisms of gene expression, including transcriptional regulation, post-transcriptional regulation, and epigenetics. Emphasizes nutrient/gene interactions involved in the etiology or prevention of chronic disease, such as cancer, cardiovascular disease, and metabolic syndrome. Prerequisite: CHEM 3700. (Sp)</p> <p>NFS 6420 Molecular Nutrition Laboratory 2 (dual listing 5420) Explores modern molecular nutrition techniques for determining the influence of nutrients on gene regulation. Focuses on modern techniques commonly used in the field of molecular nutrition, including cell culture, mRNA isolation and quantification, western blotting, promoter cloning/mutation, and nutrient/trans factor interactions. (Sp)</p>
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<p>NFS 6500 Food Analysis 4 (dual listing 5500) Application and theory of physical, chemical, and instrumental techniques for determination of composition and quality of food. Prerequisite: NFS 6560/5560. (Sp)</p>	<p>NFS 6730 Understanding Crystallization in Food Systems* 1 Introduces basic concepts of crystallization mechanisms, including theories governing the crystallization process and their applications in food systems. Emphasizes the importance of controlling crystallization and its influence on final product quality and stability. (Sp)</p>
<p>NFS 6510 Food Laws and Regulations 2 (dual listing 5510) Provides background of federal/state laws and regulations and case law history affecting food production, processing, packaging, marketing, and distribution of food products. (Sp)</p>	<p>NFS 6740 Waste and Energy Management* 1 Explores energy and waste management, including waste treatment methods and ways to reduce energy, or substitute with less-costly energy, in the food processing industry. Students learn through lectures, cooperative learning, site visits, and example problems. (F)</p>
<p>NFS 6560 Food Chemistry 4 (dual listing 5560) Chemical structure, properties, reactions, and interactions of the important chemical constituents of food. Prerequisites: CHEM 3700 and 3710, or NFS 3070. (F)</p>	<p>NFS 6750 Advanced Dietetics Practicum 1-6 (dual listing 5750) Advanced dietetics practicum in clinical nutrition, community nutrition, food service management, or research. Prerequisite: Must be enrolled in final year in Coordinated Program in Dietetics (CPD) or Didactic Program in Dietetics (DPD). (F,Sp,Su)^{DE}</p>
<p>NFS 6610 Food and Bioprocess Engineering 3 (dual listing 5610) Standardization and compounding of biomaterials and food products; preservation processing using heat, refrigeration, concentration, and dehydration. Basic unit operations in the bioprocessing industry. Prerequisite: BIE 3200. Also taught as BIE 6610/5610. (F)</p>	<p>NFS 6760 Special Topics in Nutrition and Food Science 1-3 Selected topics in nutrition and food science, based on individual faculty interests. (F,Sp,Su)</p>
<p>NFS 6620 Microbiology of Fermented Dairy Foods** 1 Explores the microbiology and physiology of dairy starter and nonstarter bacteria. Particular emphasis placed on important metabolic functions and biochemical pathways used by these microorganisms in food fermentations and their influence on product attributes. (Sp)</p>	<p>NFS 6780 Advanced Institutional Food Service Management 3 Principles of management applied to institutional food services and advanced professional certification curriculum. To enroll, student must be an MS candidate in dietetics or be eligible to take the national SFNS (School Food and Nutrition Service) exam. (Sp)</p>
<p>NFS 6640 Food Proteins** 1 Covers topics in protein structure, folding, functional properties, allergens, and purification. (F)</p>	<p>NFS 6830 International Nutrition: Macronutrients 3 (dual listing 5830) Explores principles and roles of macronutrients in causing malnutrition influencing health, survival, and developmental capacity of populations, especially in developing societies. Discussion of approaches implemented at household, community, national, and international levels to improve nutritional status. (F)</p>
<p>NFS 6650 Meat Science* 2 Structure of muscle tissue, chemistry of contraction and relaxation, factors affecting meat tenderness, and postmortem changes and their effect on meat quality. Prerequisite: CHEM 3700. (Su)</p>	<p>NFS 6900 Special Problems 1-4[®] Individual problems and research problems for upper-division students in Nutrition and Food Sciences. (F,Sp,Su)^{DE}</p>
<p>NFS 6660 Cheese Science** 2 Studies application of chemistry and microbiology to the manufacture of cheese. (Su)</p>	<p>NFS 6910 Teaching Experiences in Nutrition and Food Sciences 1-2[®] Students work with faculty in the Nutrition and Food Sciences Department to gain experience in teaching. (F,Sp,Su)</p>
<p>NFS 6670 Food Biosecurity and Crisis Management* 1 Food biosecurity addresses the intentional contamination of a food product. Crisis management focuses on how a food company deals with a crisis situation; including product recalls, dealing with the media, and damage control. (F)</p>	<p>NFS 6970 Thesis Research 1-12[®] For students working on MS research. Graded Pass/Fail <i>only</i>. (F,Sp,Su)^{DE}</p>
<p>NFS 6680 Food Enzymes** 2 Covers topics in food enzymes, including enzyme classification and nomenclature, reaction kinetics, food applications, and immobilization technology. (F)</p>	<p>NFS 6990 Continuing Graduate Advisement 1-12[®] Graded Pass/Fail <i>only</i>. (F,Sp,Su)</p>
<p>NFS 6690 Genetics of Lactic Acid Bacteria** 1 Describes structural and functional characteristics of four major genetic elements described in lactic acid bacteria: plasmid DNA, transposable elements, bacteriophages, and the chromosome. Prerequisites: BIOL 3300 and CHEM 5700. (Sp)</p>	<p>NFS 7800 Seminar 1[®] Reports and discussion on research and current literature. (F,Sp)^{DE}</p>
<p>NFS 6700 Dairy Chemistry* 1 Students gain an understanding of the chemical structure, properties, biosynthesis, and reactions of the main constituents in milk. Students apply this knowledge to the development and processing of dairy foods. (Sp)</p>	<p>NFS 7970 Dissertation Research 1-12[®] For students working on PhD research. Graded Pass/Fail <i>only</i>. (F,Sp,Su)</p>
<p>NFS 6720 Lipid Analysis and Metabolism* 1 Focuses on lipid analysis and metabolism. Discusses biological roles of lipid classes, as well as appropriate methods for their analysis. Additionally, covers biological role lipids play in health and disease. (F)</p>	<p>NFS 7990 Continuing Graduate Advisement 1-12[®] Graded Pass/Fail <i>only</i>. (F,Sp,Su)</p>

[®]Repeatable for credit. Check with major department for limitations on number of credits that can be counted for graduation.

^{DE}This course may be available through Regional Campuses and Distance Education (RCDE), and may be offered through multiple delivery methods. Current RCDE offerings may be viewed at: <http://distance.usu.edu/>

*Taught 2010-2011.
 **Taught 2009-2010.