

Department of Nutrition, Dietetics, and Food Sciences

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Degrees offered: Bachelor of Science (BS) in Nutrition, Dietetics, and Food Sciences; Master of Science (MS) and Doctor of Philosophy (PhD) in Nutrition and Food Sciences; Master of Food Microbiology and Safety (MFMS); Master of Dietetics Administration (MDA)

Undergraduate emphases: BS—Food Science, Food Technology Management, Nutrition Science, Biotechnology, and Dietetics

Graduate specializations: MS, PhD—Dietetics, Food Biotechnology, Food Chemistry, Food Engineering, Food Microbiology, Food Processing, Human Nutrition, and Nutrient Metabolism

Undergraduate Programs

Objectives

The Department of Nutrition, Dietetics, and Food Sciences has the following three objectives:

1. To provide students with the scientific/academic background necessary to function well in further academic pursuits or future work environments.
2. To provide students with the critical thinking and problem solving skills necessary to enhance further academic pursuits or future work environments.
3. To provide students with practical application and work experience credentials to provide personal and employment satisfaction.

Program Emphases and Career Opportunities

Food Science

A degree in the Food Science emphasis applies principles of engineering, biology, and physical science to food. Students in this discipline focus on the production, selection, preservation, processing, packaging, distribution, and use of safe, nutritious, and wholesome food. Graduates receive an excellent background in chemistry, engineering, food processing, microbiology, sensory evaluation, and statistics. Students planning to apply to graduate school are encouraged to major in Food Science instead of Food Technology Management. The Food Science program is approved by the Institute of Food Technologists.

Food Technology Management

The Food Technology Management emphasis gives students a broad background in basic food science and in business administration to be applied to the business-oriented aspects of the food industry. Students also have the option of *either* a **Business Minor** or an **Operations Management Minor** through the Huntsman School of Business. Graduates are sought by private food industry and public institutions in management positions.

Nutrition Science

The Nutrition Science emphasis is for students who are interested in studying the molecular and cellular aspects of human health and disease. This is a multi-disciplinary program in which students learn to apply techniques from the fields of molecular and cellular biology, physiology, genetics, and biochemistry to issues in nutrition. Students will gain experience in laboratory, clinical, and epidemiological methods, and may have the opportunity to gain laboratory research experience in nutrition studies being conducted by faculty members. The undergraduate Bachelor of Science degree qualifies a student with the Nutrition Science emphasis to find employment in industry or academic laboratories, as well as in government agencies. It can also be used as preparation for medical or graduate school.

The **Nutrition Science Pre-Medical School** option is for students planning to pursue medical school, dental school, or another professional degree. The curriculum is based on undergraduate admission requirements for the University of Utah Medical School and meets most medical school admission requirements. Because nutrition is an applied science and offers research opportunities, completing a degree in this emphasis area may give students an advantage for admission to medical school, over applicants representing other science majors.

Biotechnology

The Biotechnology emphasis gives students a specialized background in biotechnology with depth training in either **Food Science** or **Nutrition Science**. Graduates of the program will be well-qualified to pursue biotechnology-related positions related to their depth area of choice.

Dietetics

Students in the Dietetics emphasis prepare to become Registered Dietitians (RDs) and receive excellent instruction and experience in clinical nutrition, community nutrition, and food service management. USU offers two programs in Dietetics—the **Coordinated Program in Dietetics (CPD)** and the **Didactic Program in Dietetics (DPD)**. Both are accredited by the the Commission on Accreditation for Dietetics Education (CADE) of the American Dietetic Association, 20 South Riverside Plaza Suite 2000, Chicago IL 60606-6995, tel. (312) 899-0040.

The **CPD Program** includes coursework **and** a 1,200-hour supervised internship. The graduate is eligible to take the national registration exam to become an RD upon completion of the BS degree.

After completing requirements for a bachelor's degree, students in the **DPD Program** are eligible to apply for a supervised internship experience elsewhere. This includes the USU Distance Internship and others across the nation. Upon completion of a post-BS internship, graduates are eligible to take the national registration exam.

Admission into either Dietetics Program (CPD or DPD) requires formal application during spring semester of the sophomore year (or when prerequisite coursework is completed). Ten to twelve students are accepted into the CPD program each year and go through the program in unison. Other applicants who meet the minimum criteria for entry into the Dietetics Program (a GPA of 3.0 or higher and a grade of C or better in required prerequisite coursework) are eligible for entry into the DPD program. Selected applicants are expected to register for dietetics courses beginning the following fall semester.

Completion of courses required for the Food Science Emphasis, Nutrition Science emphasis, or Dietetics emphasis may be suitable preparation for students planning to apply to medical school.

Department of Nutrition, Dietetics, and Food Sciences

Bachelor of Science Requirements

Departmental Admission Requirements

Admission requirements for the Department of Nutrition, Dietetics, and Food Sciences are the same as those described for the University on pages 30-35. Students in good standing may apply for admission to the department. Students planning to major in Nutrition, Dietetics, and Food Sciences should take algebra, chemistry, and biology in high school.

Graduation Requirements

All graduates from the department must have completed one of the five emphasis areas in the department and must meet the following minimum requirements:

1. Grade point average (GPA) must be 2.5 or higher in all courses required for the major.
2. A grade of C or better must be received in every required course offered through the department (i.e., courses having an NFS prefix).
3. Courses required for the major may be repeated *only once* to improve a grade, unless approved by the department head or program director.
4. Courses required for the major may not be taken as *Pass-D-Fail* credits.

Minor in Food Sciences

Students with majors outside of the Nutrition, Dietetics, and Food Sciences Department may graduate with a minor in Food Sciences by completing NFS 1020, 3070, 3110, 5020 (or 5030), and 5560 with a minimum cumulative GPA of 2.5 for these courses. Prerequisite courses must also be completed.

Major and Emphasis Requirements

Specific requirements for each emphasis are listed below. Requirements change periodically, and sequence of courses is important.

Food Science Emphasis

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year

Fall Semester

CHEM 1210 Principles of Chemistry I	4
CHEM 1215 Chemical Principles Laboratory I	1
MATH 1050 (QL) College Algebra.....	4
NFS 1000 Food Science from Farm to Fork.....	3
USU 1340 (BSS)* Social Systems and Issues.....	3

Spring Semester

CHEM 1220 (BPS) Principles of Chemistry II	4
CHEM 1225 Chemical Principles Laboratory II	1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
MATH 1060 Trigonometry	2
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3
USU 1300 (BAI)* U.S. Institutions.....	3

Sophomore Year

Fall Semester

BIOL 1610 Biology I	4
CHEM 2300 Principles of Organic Chemistry.....	3
CHEM 2315 Organic Chemistry Laboratory I	1
MATH 1210 (QL) Calculus I	4
NFS 3110 Food, Technology, and Health	3

Spring Semester

CHEM 3700 Introductory Biochemistry	3
CHEM 3710 Introductory Biochemistry Laboratory	1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode	3
NFS 1250 Sanitation and Safety	3
NFS 3070 Science of Food Preparation.....	4
STAT 3000 (QI) Statistics for Scientists	3

Junior Year

Fall Semester

BIOL 3300 General Microbiology	4
NFS 5020 Meat Technology and Processing	4
NFS 5560 Food Chemistry	4
PHYS 2110 General Physics—Life Sciences I.....	4

Spring Semester

NFS 3100 (QI) Sensory Evaluation of Food	3
NFS 5110 (CI) Food Microbiology	4
NFS 5500 (QI) Food Analysis.....	4
PSC 4600 (QI) Cereal Science.....	3

Senior Year

Fall Semester

NFS 4440 (QI) Fundamentals of Food Engineering.....	4
NFS 5030 Dairy Technology and Processing.....	4
NFS 5250 Occupational Experiences in Nutrition and Food Sciences.....	2
NFS 5920 (CI) Food Product Development.....	3
USU 3330 (DHA)* Arts Symposium	2

Spring Semester

NFS 4990 Nutrition and Food Sciences Seminar.....	1
NFS 5510 Food Laws and Regulations.....	2
SPCH 3050 (DSS)* Technical and Professional Communication.....	3
USU 1320 (BHU)* Civilization: Humanities	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3

Food Technology Management Emphasis with Business Minor

Food Technology Management students must also fulfill requirements for a minor in *either* Business *or* Operations Management. The following four-year plan includes all courses required for a Business Minor.

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year

Fall Semester

CHEM 1110 (BPS) General Chemistry I.....	4
MATH 1050 (QL) College Algebra.....	4
NFS 1000 Food Science from Farm to Fork.....	3
USU 1340 (BSS)* Social Systems and Issues.....	3

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Spring Semester

CHEM 1115 General Chemistry Laboratory	1
CHEM 1120 (BPS) General Chemistry II	4
MATH 1100 (QL) Calculus Techniques	3
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3
USU 1300 (BAI)* U.S. Institutions.....	3

Sophomore Year

Fall Semester

BIOL 2060 Elementary Microbiology.....	4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
NFS 1240 Culinary Basics.....	3
USU 1320 (BHU)* Civilization: Humanities	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3

Spring Semester

ACCT 2010 ¹ Survey of Accounting I.....	3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....	3
NFS 1250 Sanitation and Safety	3
NFS 3070 Science of Food Preparation.....	4
STAT 3000 (QI) Statistics for Scientists	3

Junior Year

Fall Semester

MGT 3110 (DSS) ¹ Managing Organizations and People.....	3
MGT 3500 ¹ Fundamentals of Marketing.....	3
NFS 5020 Meat Technology and Processing	4
NFS 5560 Food Chemistry.....	4

Spring Semester

NFS 3100 (QI) Sensory Evaluation of Food.....	3
NFS 5110 (CI) Food Microbiology	4
NFS 5500 (QI) Food Analysis.....	4
NFS 5510 Food Laws and Regulations.....	2
SPCH 3050 (DSS)* Technical and Professional Communication.....	3

Senior Year

Fall Semester

NFS 4440 (QI) Fundamentals of Food Engineering	4
NFS 5030 Dairy Technology and Processing.....	4
NFS 5250 Occupational Experiences in Nutrition and Food Sciences	2
NFS 5920 (CI) Food Product Development.....	3

Spring Semester

FIN 3400 (QI) ² Corporate Finance (3 cr) or PFP 3460 ² Fundamentals of Personal Investing (3 cr).....	3
NFS 4990 Nutrition and Food Sciences Seminar.....	1
USU 3330 (DHA)* Arts Symposium	2
Business Minor elective courses ³	6

¹This course is required as part of the Business Minor.

²Students must complete *either* FIN 3400 *or* PFP 3460 as part of the Business Minor.

³Choose 6 credits from the *Business Minor Elective Courses*, shown below.

Business Minor Elective Courses

Students must select two of the following courses:

ACCT 2020 Survey of Accounting II (F,Sp,Su).....	3
ECN 3400 (DSS) International Economics for Business (F,Sp,Su).....	3
MGT 2050 Legal and Ethical Environment of Business (F,Sp,Su).....	3
MGT 3700 Operations Management (F,Sp,Su).....	3
MIS 2100 Principles of Management Information Systems (F,Sp,Su).....	3

Food Technology Management Emphasis with Operations Management Minor

Food Technology Management students must also fulfill requirements for a minor in *either* Business *or* Operations Management. The following four-year plan includes all courses required for an Operations Management Minor.

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year

Fall Semester

CHEM 1110 (BPS) General Chemistry I.....	4
MATH 1050 (QL) College Algebra.....	4
NFS 1000 Food Science from Farm to Fork.....	3
USU 1340 (BSS)* Social Systems and Issues.....	3

Spring Semester

CHEM 1115 General Chemistry Laboratory	1
CHEM 1120 (BPS) General Chemistry II	4
MATH 1100 (QL) Calculus Techniques	3
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3
USU 1300 (BAI)* U.S. Institutions.....	3

Sophomore Year

Fall Semester

BIOL 2060 Elementary Microbiology.....	4
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
NFS 1240 Culinary Basics.....	3
STAT 3000 (QI) Statistics for Scientists	3
USU 3330 (DHA)* Arts Symposium	2

Spring Semester

MGT 3500 ⁴ Fundamentals of Marketing.....	3
MGT 3700 ⁴ Operations Management.....	3
NFS 1250 Sanitation and Safety	3
NFS 3070 Science of Food Preparation.....	4
USU 1330 (BCA)* Civilization: Creative Arts.....	3

Junior Year

Fall Semester

ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode	3
NFS 5020 Meat Technology and Processing	4
NFS 5560 Food Chemistry.....	4
Operations Management elective course ⁵	3

Spring Semester

NFS 3100 (QI) Sensory Evaluation of Food.....	3
NFS 5110 (CI) Food Microbiology	4
NFS 5500 (QI) Food Analysis.....	4
NFS 5510 Food Laws and Regulations.....	2

Senior Year

Fall Semester

NFS 4440 (QI) Fundamentals of Food Engineering	4
NFS 5030 Dairy Technology and Processing.....	4
NFS 5920 (CI) Food Product Development.....	3
USU 1320 (BHU)* Civilization: Humanities	3

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Spring Semester

MGT 4720* Production Planning and Control.....	3
NFS 4990 Nutrition and Food Sciences Seminar.....	1
NFS 5250 Occupational Experiences in Nutrition and Food Sciences.....	2
SPCH 3050 (DSS)* Technical and Professional Communication.....	3
Operations Management Minor elective course ⁵	3

⁴This course is required as part of the Operations Management Minor.

⁵Choose 6 credits from the *Operations Management Minor Elective Courses*, shown below.

Operations Management Minor Elective Courses

Students must select two of the following courses:

MGT 3080 (QI) Operations Research (F,Sp).....	3
MGT 4750 Production Simulation (Sp).....	3
MGT 4790 Supply Chain Management (F).....	3
MGT 5730 Continuous Improvement (F).....	3

Nutrition Science Emphasis

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year

Fall Semester

BIOL 1610 Biology I.....	4
CHEM 1210 Principles of Chemistry I.....	4
CHEM 1215 Chemical Principles Laboratory I.....	1
MATH 1050 (QL) College Algebra.....	4
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3

Spring Semester

BIOL 1620 (BLS) Biology II.....	4
CHEM 1220 (BPS) Principles of Chemistry II.....	4
CHEM 1225 Chemical Principles Laboratory II.....	1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....	3
MATH 1060 Trigonometry.....	2

Sophomore Year

Fall Semester

CHEM 2300 Principles of Organic Chemistry (3 cr) or	
CHEM 2310 Organic Chemistry I (4 cr).....	3 or 4
CHEM 2315 Organic Chemistry Laboratory I.....	1
MATH 1210 (QL) Calculus I.....	4
USU 1320 (BHU)* Civilization: Humanities.....	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3
Elective course(s).....	3

Spring Semester

CHEM 3700 Introductory Biochemistry.....	3
CHEM 3710 Introductory Biochemistry Laboratory.....	1
NFS 2020 Nutrition Throughout the Life Cycle.....	3
USU 1340 (BSS)* Social Systems and Issues.....	3
Elective course(s).....	3

Junior Year

Fall Semester

BIOL 2420 Human Physiology.....	4
FCHD 3350 (DSS)* Family Finance.....	3
STAT 3000 (QI) Statistics for Scientists.....	3
Elective course(s).....	3

Spring Semester

ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....	3
HIST 3850 (DHA/CI)* History of Utah.....	3
USU 1300 (BAI)* U.S. Institutions.....	3
Elective courses.....	6

Senior Year

Fall Semester

NFS 4020 Advanced Nutrition.....	3
NFS 4550 Nutrition Assessment/Clinical Nutrition I.....	4
NFS 5220 Endocrine Aspects of Nutrition.....	2
NFS 5250 Occupational Experiences in Nutrition and Food Sciences.....	2

Spring Semester

NFS 5210 Advanced Public Health Nutrition.....	2
NFS 5300 Advanced Micronutrient Nutrition.....	3
NFS 5410 Nutrient Gene Interactions.....	3
NFS 5420 Molecular Nutrition Laboratory.....	2

Electives

Students in the Nutrition Science Emphasis must select a minimum of 15 credits from the following courses to meet their career objectives. Alternative courses must be approved by the department head and program director.

BIOL 2320 Human Anatomy (Sp,Su).....	4
BIOL 3060 (QI) Principles of Genetics (F,Sp,Su).....	4
BIOL 3100 (CI) Bioethics (Sp).....	3
BIOL 3300 General Microbiology (F,Sp).....	4
BIOL 5210 Cell Biology (F).....	3
BIOL 5620 Medical Physiology (F).....	3
CHEM 2320 Organic Chemistry II (Sp).....	4
CHEM 2325 Organic Chemistry Laboratory II (Sp).....	1
MATH 1220 (QL) Calculus II (F,Sp,Su).....	4
NFS 1250 Sanitation and Safety (Sp).....	3
NFS 3020 Nutrition and Physical Performance (F).....	2
NFS 3600 Medical Technology for Health Care Professionals (F,Sp).....	1
NFS 4480 Community Nutrition (F).....	3
NFS 5200 Nutritional Epidemiology (F).....	2
NFS 5830 International Nutrition: Macronutrients (F).....	3
PHYS 2110 General Physics—Life Sciences I.....	4
PHYS 2120 (BPS) General Physics—Life Sciences II.....	4
PUBH 4030 Communicable Disease Control (F).....	3

Nutrition Science Emphasis Program Requirements for Pre-Medical School Option

Note: The Pre-Medical School Option will meet the pre-medical school requirements. Student transcripts and diplomas will show a Nutrition, Dietetics, and Food Sciences major with a Nutrition Science emphasis.

Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Freshman Year

Fall Semester

BIOL 1610 Biology I.....	4
CHEM 1210 Principles of Chemistry I.....	4
CHEM 1215 Chemical Principles Laboratory I.....	1
MATH 1050 (QL) College Algebra.....	4
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3

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Spring Semester

BIOL 1620 (BLS) Biology II.....	4
CHEM 1220 (BPS) Principles of Chemistry II.....	4
CHEM 1225 Chemical Principles Laboratory II.....	1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....	3
MATH 1060 Trigonometry.....	2

Sophomore Year

Fall Semester

CHEM 2300 Principles of Organic Chemistry (3 cr) or	
CHEM 2310 Organic Chemistry I (4 cr).....	3 or 4
CHEM 2315 Organic Chemistry Laboratory I.....	1
MATH 1210 (QL) Calculus I.....	4
PHYS 2110 General Physics—Life Sciences I.....	4
USU 1320 (BHU)* Civilization: Humanities.....	3

Spring Semester

BIOL 2320 Human Anatomy.....	4
CHEM 2320 Organic Chemistry II.....	4
CHEM 2325 Organic Chemistry Laboratory II.....	1
NFS 2020 Nutrition Throughout the Life Cycle.....	3
PHYS 2120 (BPS) General Physics—Life Sciences II.....	4

Junior Year

Fall Semester

BIOL 2420 Human Physiology.....	4
FCHD 3350 (DSS) Family Finance.....	3
STAT 3000 (QI) Statistics for Scientists.....	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3
Univ. Studies Communications Intensive (CI) Course.....	3

Spring Semester

BIOL 3300 General Microbiology (4 cr) or	
BIOL 5620 Medical Physiology (3 cr).....	3 or 4
CHEM 3700 Introductory Biochemistry.....	3
CHEM 3710 Introductory Biochemistry Laboratory.....	1
ENGL 2010 (CL2) Intermediate Writing: Research Writing	
in a Persuasive Mode.....	3
HIST 3850 (DHA/CI)* History of Utah.....	3

Senior Year

Fall Semester

NFS 4020 Advanced Nutrition.....	3
NFS 4550 Nutrition Assessment/Clinical Nutrition I.....	4
NFS 5220 Endocrine Aspects of Nutrition.....	2
NFS 5250 Occupational Experiences in Nutrition	
and Food Sciences.....	2
USU 1340 (BSS)* Social Systems and Issues.....	3

Spring Semester

NFS 5210 Advanced Public Health Nutrition.....	2
NFS 5300 Advanced Micronutrient Nutrition.....	3
NFS 5410 Nutrient Gene Interactions.....	3
NFS 5420 Molecular Nutrition Laboratory.....	2
USU 1300 (BAI)* U.S. Institutions.....	3

Biotechnology Emphasis

Students selecting the Biotechnology Emphasis must choose either **Depth Training in Food Science** or **Depth Training in Nutrition Science**. Courses followed by an asterisk (*) are suggested for fulfilling University Studies Requirements.

Depth Training in Food Science

Freshman Year

Fall Semester

CHEM 1210 Principles of Chemistry I.....	4
CHEM 1215 Chemical Principles Laboratory I.....	1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....	3
MATH 1050 (QL) College Algebra.....	4
NFS 1000 Food Science from Farm to Fork.....	3
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3

Spring Semester

CHEM 1220 (BPS) Principles of Chemistry II.....	4
CHEM 1225 Chemical Principles Laboratory II.....	1
ECN 1500 (BAI)* Introduction to Economic Institutions, History,	
and Principles.....	3
MATH 1100 (QL) Calculus Techniques.....	3
NFS 2040 Introduction to Biotechnology.....	1
USU 1320 (BHU)* Civilization: Humanities.....	3

Sophomore Year

Fall Semester

BIOL 1610 Biology I.....	4
CHEM 2300 Principles of Organic Chemistry.....	3
CHEM 2315 Organic Chemistry Laboratory I.....	1
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a	
Persuasive Mode.....	3
NFS 3110 Food, Technology, and Health.....	3

Spring Semester

BIOL 3060 (QI) Principles of Genetics.....	4
BIOL 3300 General Microbiology.....	4
CHEM 3700 Introductory Biochemistry.....	3
CHEM 3710 Introductory Biochemistry Laboratory.....	1
STAT 3000 (QI) Statistics for Scientists.....	3

Junior Year

Fall Semester

NFS 5260 Methods in Biotechnology: Molecular Cloning.....	3
NFS 5560 Food Chemistry.....	4
PHYS 2110 General Physics—Life Sciences I.....	4
SPCH 3330 (DSS)* Intercultural Communication.....	3

Spring Semester

NFS 3100 (QI) Sensory Evaluation of Food.....	3
NFS 5110 (CI) Food Microbiology.....	4
NFS 5500 (QI) Food Analysis.....	4
NFS 5510 Food Laws and Regulations.....	2
PSC 4600 (QI) Cereal Science.....	3

Summer Semester

NFS 5250 Occupational Experiences in Nutrition	
and Food Sciences.....	1

Senior Year

Fall Semester

NFS 5020 Meat Technology and Processing (4 cr) or	
NFS 5030 Dairy Technology and Processing (4 cr).....	4
NFS 5920 (CI) Food Product Development.....	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3
USU 1340 (BSS)* Social Systems and Issues.....	3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course.....	3

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Spring Semester

ADVS 3200 Ethical Issues in Genetic Engineering and Biotechnology.....	3
NFS 4990 Nutrition and Food Sciences Seminar.....	1
NFS 5160 Methods in Biotechnology: Cell Culture.....	3
NFS 5420 Molecular Nutrition Laboratory.....	2
STAT 5200 Design of Experiments.....	3

Depth Training in Nutrition Science

Freshman Year

Fall Semester

BIOL 1610 Biology I.....	4
CHEM 1210 Principles of Chemistry I.....	4
CHEM 1215 Chemical Principles Laboratory I.....	1
MATH 1050 (QL) College Algebra.....	4
USU 1340 (BSS)* Social Systems and Issues.....	3

Spring Semester

BIOL 1620 (BLS) Biology II.....	4
CHEM 1220 (BPS) Principles of Chemistry II.....	4
CHEM 1225 Chemical Principles Laboratory II.....	1
MATH 1060 Trigonometry.....	2
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3
NFS 2040 Introduction to Biotechnology.....	1

Sophomore Year

Fall Semester

BIOL 2420 Human Physiology.....	4
CHEM 2300 Principles of Organic Chemistry.....	3
CHEM 2315 Organic Chemistry Laboratory I.....	1
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....	3
MATH 1100 (QL) Calculus Techniques.....	3

Spring Semester

CHEM 3700 Introductory Biochemistry.....	3
CHEM 3710 Introductory Biochemistry Laboratory.....	1
ECN 1500 (BAI)* Introduction to Economic Institutions, History, and Principles.....	3
NFS 2020 Nutrition Throughout the Life Cycle.....	3
USU 1320 (BHU)* Civilization: Humanities.....	3
Univ. Studies Communications Intensive (CI) Course.....	3

Junior Year

Fall Semester

BIOL 5620 Medical Physiology.....	3
NFS 4020 Advanced Nutrition.....	3
PHYS 2110 General Physics—Life Sciences I.....	4
STAT 3000 (QI) Statistics for Scientists.....	3
USU 1330 (BCA)* Civilization: Creative Arts.....	3

Spring Semester

BIOL 3060 (QI) Principles of Genetics.....	4
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....	3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course.....	3
Univ. Studies Depth Social Sciences (DSS) Course.....	3
Univ. Studies Communications Intensive (CI) Course.....	3

Senior Year

Fall Semester

BIOL 3300 General Microbiology.....	4
BIOL 5210 Cell Biology.....	3
NFS 5200 Nutritional Epidemiology.....	2
NFS 5260 Methods in Biotechnology: Molecular Cloning.....	3

Spring Semester

ADVS 3200 Ethical Issues in Genetic Engineering and Biotechnology.....	3
BIOL 5150 Immunology.....	3
NFS 5160 Methods in Biotechnology: Cell Culture.....	3
NFS 5220 Endocrine Aspects of Nutrition.....	2
NFS 5420 Molecular Nutrition Laboratory.....	2

Dietetics Emphasis

Students selecting the Dietetics Emphasis must choose either the Coordinated Program in Dietetics (CPD) or the Didactic Program in Dietetics (DPD).

Coordinated Program in Dietetics (CPD)

Freshman Year

Fall Semester

CHEM 1210 Principles of Chemistry I.....	4
MATH 1050 (QL) College Algebra.....	4
NFS 1020 (BLS) Science and Application of Human Nutrition.....	3
NFS 1240 Culinary Basics.....	3
PSY 1010 (BSS) General Psychology (3 cr) or SOC 1010 (BSS) Introductory Sociology (3 cr).....	3

Spring Semester

CHEM 1220 (BPS) Principles of Chemistry II.....	4
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles.....	3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose.....	3
NFS 2020 Nutrition Throughout the Life Cycle.....	3
NFS 3600 Medical Terminology for Health Care Professionals.....	1
USU 1320 (BHU) Civilization: Humanities.....	3

Sophomore Year

Fall Semester

BIOL 2420 Human Physiology.....	4
CHEM 2300 Principles of Organic Chemistry.....	3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode.....	3
FCHD 3350 (DSS) Family Finance (3 cr) or MGT 3110 (DSS) Managing Organizations and People (3 cr).....	3
NFS 3020 Nutrition and Physical Performance.....	2
STAT 1040 (QL) Introduction to Statistics (acceptable) (3 cr) or STAT 2000 (QI) Statistical Methods (preferred) (3 cr) or STAT 3000 (QI) Statistics for Scientists (preferred) (3 cr).....	3

Spring Semester

CHEM 3700 Introductory Biochemistry.....	3
CHEM 3710 Introductory Biochemistry Laboratory.....	1
NFS 1250 Sanitation and Safety.....	3
NFS 3070 Science of Food Preparation.....	4
USU 1330 (BCA) Civilization: Creative Arts.....	3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course.....	3

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Junior Year

Fall Semester

NFS 4020 Advanced Nutrition	3
NFS 4050 (CI) Education and Counseling Methods in Dietetics I	2
NFS 4480 Community Nutrition	3
NFS 4550 Nutrition Assessment/Clinical Nutrition I	4
NFS 4570 Clinical Nutrition Experience I	1
NFS 4710 Quantity Food Preparation	2
NFS 4730 Quantity Food Preparation Lab	2

Spring Semester

NFS 4060 (CI) Education and Counseling Methods in Dietetics II	2
NFS 4560 (CI) Clinical Nutrition II	4
NFS 4580 Clinical Nutrition Experience II	2
NFS 4720 (QI) Food Service Organization and Management	2
NFS 4740 Food Service Organization and Management Lab	2

Senior Year

Fall Semester

NFS 4660 (CI) Medical Dietetics	12
NFS 4780 (CI) Maternal and Child Nutrition	4

Spring Semester

NFS 4420 (QI) Nutrition Research Methodology	2
NFS 4750 Management of Dietetics	3
NFS 5210 Advanced Public Health Nutrition	2
NFS 5300 Advanced Micronutrient Nutrition	3
NFS 5750 Advanced Dietetics Practicum	3

Didactic Program in Dietetics (DPD)

Freshman Year

Fall Semester

CHEM 1210 Principles of Chemistry I	4
MATH 1050 (QL) College Algebra	4
NFS 1020 (BLS) Science and Application of Human Nutrition	3
NFS 1240 Culinary Basics	3
PSY 1010 (BSS) General Psychology (3 cr) or	
SOC 1010 (BSS) Introductory Sociology (3 cr)	3

Spring Semester

CHEM 1220 (BPS) Principles of Chemistry II	4
ECN 1500 (BAI) Introduction to Economic Institutions, History, and Principles	3
ENGL 1010 (CL1) Introduction to Writing: Academic Prose	3
NFS 2020 Nutrition Throughout the Life Cycle	3
NFS 3600 Medical Terminology for Health Care Professionals	1
USU 1320 (BHU) Civilization: Humanities	3

Sophomore Year

Fall Semester

BIOL 2420 Human Physiology	4
CHEM 2300 Principles of Organic Chemistry	3
ENGL 2010 (CL2) Intermediate Writing: Research Writing in a Persuasive Mode	3
FCHD 3350 (DSS) Family Finance (3 cr) or	
MGT 3110 (DSS) Managing Organizations and People (3 cr)	3
NFS 3020 Nutrition and Physical Performance	2
STAT 1040 (QL) Introduction to Statistics (acceptable) (3 cr) or	
STAT 2000 (QI) Statistical Methods (preferred) (3 cr) or	
STAT 3000 (QI) Statistics for Scientists (preferred) (3 cr)	3

Spring Semester

CHEM 3700 Introductory Biochemistry	3
CHEM 3710 Introductory Biochemistry Laboratory	1
NFS 1250 Sanitation and Safety	3
NFS 3070 Science of Food Preparation	4
USU 1330 (BCA) Civilization: Creative Arts	3
Univ. Studies Depth Humanities and Creative Arts (DHA) Course	3

Junior Year

Fall Semester

NFS 4020 Advanced Nutrition	3
NFS 4050 (CI) Education and Counseling Methods in Dietetics I	2
NFS 4450 Clinical Nutrition I Lab	1
NFS 4480 Community Nutrition	3
NFS 4550 Nutrition Assessment/Clinical Nutrition I	4
NFS 4710 Quantity Food Preparation	2

Spring Semester

NFS 4060 (CI) Education and Counseling Methods in Dietetics II	2
NFS 4460 Clinical Nutrition II Lab	1
NFS 4560 (CI) Clinical Nutrition II	4
NFS 4720 (QI) Food Service Organization and Management	2
SPCH 1020 (CI) Public Speaking (3 cr) or	
SPCH 2110 (CI) Interpersonal Communication (3 cr) or	
SPCH 3330 (DSS) Intercultural Communication (3 cr)	3

(Note: SPCH 3330 is taught during fall semester *only*.)

Senior Year

Fall Semester

ACCT 2010 Survey of Accounting I	3
MGT 3500 Fundamentals of Marketing	3
NFS 4780 (CI) Maternal and Child Nutrition	3
NFS 5200 Nutritional Epidemiology	2
NFS 5750 Advanced Dietetics Practicum	3

Spring Semester

NFS 4750 Management of Dietetics	3
NFS 5150 Clinical Nutrition Practice	1
NFS 5210 Advanced Public Health Nutrition	2
NFS 5300 Advanced Micronutrient Nutrition	3

Financial Support

The Department of Nutrition, Dietetics, and Food Sciences and the College of Agriculture award scholarships in addition to those available through the University Financial Aid Office. Information and application forms may be obtained from the department office. Students may also contact the department for assistance in finding employment that will enhance their academic studies. Many students are employed by the department and by private firms near the University.

Assessment of Instruction

Information about assessment within each of the departmental programs can be found at:

<http://nfs.usu.edu/htm/assessment/>

Departmental Honors

Students who would like to experience greater academic depth within their major are encouraged to enroll in departmental honors. Through original, independent work, Honors students enjoy the benefits of close supervision and mentoring, as they work one-on-one with faculty in select upper-division departmental courses. Honors students also

Department of Nutrition, Dietetics, and Food Sciences

complete a senior project, which provides another opportunity to collaborate with faculty on a problem that is significant, both personally and in the student's discipline. Participating in departmental honors enhances students' chances for obtaining fellowships and admission to graduate school. Minimum GPA requirements for participation in departmental honors vary by department, but usually fall within the range of 3.30-3.50. Students may enter the Honors Program at almost any stage in their academic career, including at the junior (and sometimes senior) level. The campus-wide Honors Program, which is open to all qualified students regardless of major, offers a rich array of cultural and social activities, special classes, and the benefit of Honors early registration. Interested students should contact the Honors Program, Main 15, (435) 797-2715, honors@usu.edu. Additional information can be found online at: <http://www.usu.edu/honors/>

Additional Information

For more information about Bachelor of Science requirements and the sequence in which courses should be taken, see major requirement sheet, available from the Nutrition, Dietetics, and Food Sciences Department, or online at: <http://www.usu.edu/majorsheets/>

Graduate Programs

MS and PhD Programs

Admission Requirements

Candidates for graduate study in the Department of Nutrition, Dietetics, and Food Sciences need a background in chemistry, biochemistry, physics, mathematics, statistics, bacteriology and physiology. Prior coursework in food science or nutrition is desirable. Students may be accepted into the NFS graduate program with deficiencies in these areas; however, their supervisory committee will require that competence equivalent to a BS degree in Nutrition, Dietetics, and Food Sciences be obtained as part of the *Program of Study*.

Students must meet some departmental requirements, in addition to requirements of the School of Graduate Studies, as shown at: <http://www.usu.edu/graduateschool/apply/>

Departmental requirements include the following:

1. Students must attain Graduate Record Examination (GRE) scores at the 40th percentile minimum on the Verbal, Quantitative, and Analytical Writing tests.
2. Before acceptance into a PhD program, a student must have obtained an MS degree or have a manuscript reporting original research accepted for publication in a refereed journal.
3. Before acceptance into the Department of Nutrition, Dietetics, and Food Sciences, potential MS and PhD graduate students must be accepted by a faculty member who is willing to add them to his or her research team.

Registration Requirements

Once admitted, students are required to maintain enrollment as follows:

1. Enrollment in at least 3 credits per semester in order to use University facilities and receive direction (including thesis or dissertation direction) from their major professor.

2. Enrollment in at least 9 credits per semester if receiving an assistantship or fellowship from Utah State University.
3. Enrollment in no more than 6 credits per semester if employed full time by Utah State University.

Selecting a Major Professor

Initially, students are accepted into the department when at least one faculty member has expressed a willingness to add the student to his or her research team. By doing so, the faculty member guarantees at the time of acceptance that the student may work in his or her research program. However, offers of financial aid must be discussed directly with the faculty member. Students may choose as their major professor any faculty member who can and is willing to accommodate them.

Establishing a Supervisory Committee

A supervisory committee must be selected by the student in conjunction with his or her major professor during the student's first semester as an NFS graduate student. The major professor serves as the chair of the supervisory committee. A minimum of three members (at least two from the department) including the major professor are required for the MS program, and at least five (three or more from the department and one or more from outside the department) for a PhD program must be suggested.

The *Supervisory Committee Approval Form* needs to be submitted to the department head by the 8th week of the first semester for MS students and the 15th week of the first semester for PhD students. The department head must approve the student's committee and may add members. It is the student's responsibility to meet with the proposed committee members to make certain they are able and willing to serve. The *Supervisory Committee Approval Form* is then forwarded to the dean of the School of Graduate Studies for final approval. (**Note:** The *Supervisory Committee Approval Form* may be found on the School of Graduate Studies website at: http://www.usu.edu/graduateschool/degree_completion/pdf/Committee.pdf, or may be obtained at the Nutrition, Dietetics, and Food Sciences departmental office.)

Defining a Program of Study

Students should register for their first semester based on advice from their major professor. Students should then prepare a *Program of Study* in conjunction with their major professor. The *Program of Study* should ensure fulfillment of the minimum requirements for all NFS graduate students (shown below) and also include other courses providing the background necessary to conduct their research.

Students need to schedule a meeting with their supervisory committee to discuss the proposed *Program of Study* by the end of the first semester for MS students and by the end of the second semester for PhD students. A copy of the proposed *Program of Study* should be given to each committee member several days prior to the committee meeting.

The purpose of the committee meeting is to secure the supervisory committee's approval of the *Program of Study*. The committee will determine any deficiencies in core BS competencies or academic background. Students in the NFS graduate program should have already taken undergraduate general chemistry, organic chemistry, biochemistry, algebra, and statistics. Although these courses may be taken as part of the graduate program, they will not be counted as graduate credit in the *Program of Study*.

The supervisory committee is responsible for ensuring NFS graduate students have (or obtain during their program of study) the expected core competencies of NFS bachelor's degree graduates. This can be

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based upon transcripts of courses from prior studies, passing courses listed in the program of study (with a minimum grade of *B*), or by administering a written or oral examination.

The committee will also determine that the courses included in the *Program of Study* meet the minimum requirements for obtaining an MS or PhD in Nutrition and Food Sciences (as shown below). All members of the committee, as well as the department head, must sign the *Program of Study Form* before it is sent to the School of Graduate Studies. Registration for all subsequent semesters should be based on the approved *Program of Study*. Changes to the *Program of Study* require a letter written by the major professor to the School of Graduate Studies (with copies to all members of the committee and the department head) justifying the change.

The student may register for courses not listed on the *Program of Study* with approval of his or her major professor (especially if the student is receiving a research assistantship). However, the student will be responsible for paying any additional in-state and out-of-state tuition and fees required for these additional classes. Tuition waivers (and tuition remission for PhD students) are based upon the approved Program of Study.

Minimum Course Requirements for MS/PhD Students in Nutrition and Food Sciences

BS Core Competency Classes by Graduate Specialization

Food Science. The following courses are required for students specializing in a food science related area: NFS 3110 (Food Technology and Health), NFS 5020 (Meat Technology and Processing) or NFS 5030 (Dairy Technology and Processing), NFS 5110 (Food Microbiology), NFS 5500 (Food Analysis), NFS 5560 (Food Chemistry), and STAT 3000 (Statistics for Scientists).

Nutrition. The following courses are required for students specializing in a nutrition related area: NFS 4020 (Advanced Nutrition) and STAT 3000 (Statistics for Scientists).

Program of Study for MS and PhD Degrees

The following courses are required. For further information, see pages 116-119 of the *School of Graduate Studies* section of this catalog.

1. **NFS Graduate courses.** NFS graduate courses (other than BS core competency courses): 5 credits for MS, 10 credits for PhD.
2. **Biochemistry and Statistics.** Biochemistry (CHEM 5700, 5710): 3 credits for MS, 6 credits for PhD; Statistics (STAT 5100, 5120, 5200, 5600): 3 credits for MS, 6 credits for PhD.
3. **NFS Graduate Seminar (NFS 7800).** Students must enroll in NFS 7800 during each fall and spring semester: 2 credits for MS, 6 credits for PhD
4. **Teaching.** INST 7920: 1 credit required for PhD; NFS 6910 (Teaching Experience) or NFS 5250 (Occupational Experience): 2 credits required for PhD. (Credits in this area are *not* required for MS.)
5. **Other Graduate Courses.** BS core competency courses taken at the 6000 level, or other USU courses approved for graduate studies, may be included. For MS, 5-11 credits are required; for PhD, 15-25 credits are required.

6. **Research.** For MS, 6-12 credits of NFS 6970 are required. For PhD, 34-45 credits of NFS 7970 are required. If students desire to do research beyond the *Program of Study* requirements, they should register for Continuing Graduate Advisement.

Total Credits Required

For the MS degree, 30 total credits are required. For the PhD degree, 90 total credits are required (including the 30 credits taken for the MS).

Research Proposal

In consultation with the major professor, the student must choose a research area suitable for the MS thesis or PhD dissertation, and then prepare a research proposal. Research proposals should be written and approved by the end of the second semester for students completing the MS degree and by the end of the third semester for PhD students.

The content and duration of the proposed research should be appropriate for the degree. It is expected that MS research and coursework (including writing and defense of the thesis) should be completed within 2 years (24 months). The length of research being proposed for the PhD dissertation is dependent on the discovery by the student of a substantial level of new information that can be added to their field of specialization.

The proposal should include the following:

1. Title
2. Description of the problem, based on the most current literature
3. Statement of the purpose of the intended research
4. Research Plan
5. List of references cited, presented in a form acceptable for publication in a scientific journal in the student's field

The student prepares the research proposal under the guidance of the major professor. Once the research proposal is completed, it is the student's responsibility to schedule a meeting with his or her supervisory committee, and to provide each committee member with a copy of the research proposal at least two weeks prior to the meeting.

During the committee meeting, the student is expected to provide an oral presentation of the proposed research, and discuss any regulated aspects of the research, such as hazardous materials, experimental animals, or human subjects. After all members of the supervisory committee have approved the research proposal, a copy of the proposal will be sent to the graduate school.

Departmental Seminar

The NFS graduate seminar (NFS 7800) is held in the Nutrition and Food Sciences Building, room 202 from 3:30 to 5:00 p.m. each Wednesday during fall and spring semesters. All NFS MS and PhD students are expected to register for and attend this seminar during each semester for which they are enrolled as full-time graduate students.

This seminar will include presentations by NFS faculty members, faculty members from other USU departments, invited speakers, and graduate students. In addition to the presentations, NFS 7800 will also include assignments on topics such as critical thinking, scientific writing, poster preparation, and grant proposal writing. The theme of the seminar will be chosen by the NFS faculty member who is assigned as the course instructor.

During the semester in which they defend their thesis or dissertation, all MS and PhD students are required to give a presentation (a 30 to 45 minute seminar) on the results of their research. This presentation

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will be given to the NFS faculty members and students as part of the NFS 7800 seminar series. The student must invite all members of the supervisory committee to attend this seminar presentation. At the beginning of the semester in which they plan to defend their thesis or dissertation, students need to schedule a date for their presentation with the NFS 7800 instructor.

Comprehensive Examination (PhD students only)

Before a student can become a candidate for the PhD degree, he or she must take a comprehensive examination, as required by the School of Graduate Studies. After completion of the courses listed in the *Program of Study*, the student should schedule a meeting of their committee for the comprehensive examination. This is usually an oral examination (although committee members have the option of providing a written exam), and the student should bring the *Application for Candidacy for Doctoral Degree Form* to the examination.

Typically students will be asked questions related to their area of specialization and their field of research. However, the comprehensive exam can also be used to test students' overall knowledge of food science or nutrition, and committee members can ask any questions that will test the student's knowledge and ability to synthesize nutrition and food science information, as well as answer questions. The form should be completed at this time. On the *Application for Candidacy for Doctoral Degree Form*, the committee members will list the field in which they examined the student, and then sign the form accordingly.

Thesis or Dissertation Final Examination

Students write the thesis or dissertation under the guidance of their major professor. To schedule a tentative date for the final examination (or defense) of the thesis or dissertation, students should also contact their supervisory committee members. Students need to plan well in advance, so that there will be sufficient time allowed for the student to complete their writing and for the committee members to read the thesis or dissertation. When the thesis or dissertation is ready to be defended, and at least four weeks prior to the tentative defense (or final) examination date and time, the student submits a copy to each committee member.

After the committee members have read the thesis or dissertation and have determined that it is indeed ready to be defended, the student prepares the *Appointment for Examination Form*. Each of the supervisory committee members is required to sign this form, indicating that they have read and tentatively approve the content and format of the thesis or dissertation, and that they can be in attendance at the defense.

The *Appointment for Examination Form* needs to be submitted to the School of Graduate Studies a minimum of 10 working days prior to the defense. The School of Graduate Studies will appoint one of the supervisory committee members (other than the major professor) to chair the defense examination.

Completing the Thesis or Dissertation

After a successful defense of the thesis or dissertation, the student is required to make any changes to the thesis or dissertation that are required as a consequence of the final examination. At this time, the student can schedule with the School of Graduate Studies a date by which he or she expects to have the thesis or dissertation available for review. If the thesis or dissertation is not submitted to the School of Graduate Studies prior to this date, it will be reviewed at the next available date.

When the thesis or dissertation has been revised to the satisfaction of the committee member(s) assigned the responsibility of ensuring such changes are completed to the satisfaction of the supervisory committee (usually the major professor), the front page of the thesis or dissertation can be signed. The student then completes the *Thesis/Dissertation Format and Style Form* and obtains the major professor's signature (in the NFS Department the major professor also acts as the departmental format/style reviewer) and submits the thesis or dissertation to the School of Graduate Studies.

Following review by the School of Graduate Studies, the thesis or dissertation is collected by the NFS Department and returned to the major professor, along with a list of corrections. The major professor then has the responsibility of ensuring that the thesis or dissertation is revised (if necessary), and of signing a release indicating that the thesis or dissertation is ready for binding. The student may then make the needed copies of the thesis or dissertation and submit them for binding. It is also the student's responsibility to ensure that all other forms and fees related to the thesis or dissertation and to the completion of his or her degree are finalized.

Other Graduate Programs

Master of Food Microbiology and Safety (MFMS)

The MFMS degree is a professional degree designed to provide students with depth training in food safety assurance and the use of management systems such as HACCP. The degree is primarily intended for individuals planning careers in food quality assurance or other food safety-related positions in the food industry.

MFMS Admission Requirements

Students seeking entry into the MFMS program must satisfy the minimum admission requirements of the USU School of Graduate Studies and the NFS Department, and must also achieve a score of 3 (equivalent to the 40th percentile) or higher on the newly administered GRE Written Examination. Applications will be reviewed by the MFMS Advisory Committee, which is responsible for accepting students into the MFMS program and assigning them an advisor. The advisor will then consult with the student to select two additional graduate committee members.

MFMS Program of Study

The MFMS program of study has been tailored for students with undergraduate training in (1) food science or (2) microbiology or biology. Students who lack prerequisite competencies in food science, microbiology, or biology will be required to address those deficiencies during the MFMS program of study. Course requirements to meet specific deficiencies will be designated by the student's advisory committee and, in accordance with School of Graduate Studies policy, may or may not count toward course requirements for the MFMS program of study.

The MFMS program of study, outlined below, requires a minimum of 32 semester credits, including (1) 10 semester credits of core coursework in food safety assurance, microbiology, and epidemiology; (2) at least 19 semester credits of coursework based on the student's career goals and undergraduate competencies; and (3) the written preparation and oral presentation of a substantive literature review on a food safety topic.

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MFMS Program Requirements (32 credits minimum)

Students must complete all of the following courses (12 credits): NFS 6170, 6200, 6900 (2 credits), 7800 (2 credits); BIOL 5850/6850; and PUBH 4030. During NFS 6900 (Special Problems), students will prepare a substantive written literature review of a food safety topic. NFS 7800 (Seminar) must be taken during two semesters; during the final seminar, students must make an oral presentation on the food safety topic used for their literature review.

Students with a **BS degree in Food Sciences** must demonstrate competency equivalent to a USU BS degree in Nutrition, Dietetics, and Food Sciences with a Food Science emphasis. These students must also select a minimum of 10 credits from the following: ADVS 6400; BIOL 5150 (offered biennially), 5300, 5330. The remaining credits should generally be selected from the following, although additional course substitutions may be made with approval of the student's advisory committee: NFS 6020, 6030, 6120, 6210, 6500, 6510, 6610; NFS 6270, 6670, 6680, 6690 (the preceding four courses are offered biennially); ASTE 6260; CHEM 6730.

Minimum program prerequisites for students with a **BS in biology, microbiology, or an equivalent degree** include the following (the USU equivalent course is listed in parentheses): biochemistry (CHEM 3700), general microbiology (BIOL 3300), microbial physiology (BIOL 5300), and statistics (STAT 3000). In addition, these students must complete *both* NFS 6110 and 6500, and must take *at least one* of NFS 6020 and 6030. The remaining credits should generally be selected from the following, although additional course substitutions may be made with approval of the student's advisory committee: NFS 6120, 6210, 6510, 6610; NFS 6270, 6670, 6680, 6690, BIOL 5150 (the preceding five courses are offered biennially); ADVS 6400; ASTE 6260; CHEM 6730.

Master of Dietetics Administration (MDA)

The MDA degree is a professional degree designed to provide dietitians with in-depth training in management and leadership in food and nutrition program administration. Nationwide, there is a need for professionally trained managers at local, district, state, and federal levels in food and nutrition programs, including school, university, and hospital food services; public health programs; and clinical management. This program provides in-depth training in financial management, human resource management, marketing, and dietetics-specific management.

MDA Admission Requirements

Candidates for the MDA program must qualify for one of the following categories: *Option 1*: Must have completed the USU Extension Dietetics Internship; *or Option 2*: Must be currently registered as a dietitian with at least two years of work experience. Students seeking entry must also satisfy: (1) admission requirements of the USU School of Graduate Studies; (2) admission requirements of the NFS Department; and (3) admission requirements of the MDA program, including a letter of application and an approved *Program of Study*.

The MDA Advisory Committee is responsible for reviewing applications, accepting students into the MDA program, and assigning students to an advisor.

MDA Program of Study

Option 1 is tailored for applicants who have completed the USU Extension Dietetics Internship. Students must complete a minimum of 41 credits and a Plan B thesis. The completed USU Extension Dietetics Internship provides 26 of the 41 credits. Following the internship, 15

additional credits are required including: NFS 6780, 6900 (3 credits), 6970 (2 credits), 7800 (1 credit), and two courses to be determined by the MDA candidate and the Advisory Committee.

Option 2 is tailored to the registered dietitian with at least two years of work experience. A minimum of 30 credits is required for this Plan B option. Students must complete 18 credits from the NFS Department and a minimum of 6 credits each in two of the three related disciplines. These disciplines include overall management, financial management, and human resource management. Coursework will be based on the student's career goals and competencies. The following courses are required: NFS 4750, 5200, 5210, 5510, 6750, 6780, 6900 (3 credits), 6970 (2 credits), and 7800 (1 credit). The remaining courses must be selected from the following: ECN 6310; FIN 3400, 6440; INST 6490; MGT 6370, 6410, 6500, 6550, 6630, 6760.

Registration Requirements for Graduate Students

Once admitted, students are required to maintain enrollment as follows: at least 3 credits to use University facilities and receive direction (including thesis or dissertation direction) from their major professor; at least 6 credits if on a Graduate Teaching or Research Assistantship (9 credits if employed less than 15 hours per week); at least 9 credits if on a Research Fellowship or unsupported; at least 6 credits if receiving tuition waivers, student loans, or other University-administered financial aid; and no more than 6 credits if employed full time by the University.

Financial Assistance

Some teaching assistantships and research fellowships and many research assistantships are available to graduate students in the Department of Nutrition, Dietetics, and Food Sciences. Teaching assistantships are used to cover the teaching needs of the department. Research fellowships and research assistantships are available through individual faculty members. Most research assistantships are tied to specific research projects.

The Gandhi Scholarship is available, on a competitive basis, to support outstanding students during their graduate education in food science. Each incoming student may select any advisor who fits his or her area of interest in food science. Awards are available for entering master's degree students, as well as for PhD candidates. Applications are due February 1. To obtain an application, visit the Department of Nutrition, Dietetics, and Food Sciences website or contact the departmental staff.

Career Opportunities

There is a continuing shortage of MS and PhD graduates in nutrition and food sciences. Many MS graduates go on to obtain a PhD, but all graduates have a wide choice of career opportunities.

Additional Information

Additional information and updates may be obtained by writing or telephoning the Department of Nutrition, Dietetics, and Food Sciences directly or by checking out the departmental website at: <http://www.nfs.usu.edu/>

Graduation requirements described in this catalog are subject to change. Students should check with the Department of Nutrition, Dietetics, and Food Sciences concerning possible changes.

Department of Nutrition, Dietetics, and Food Sciences

Nutrition, Dietetics, and Food Sciences Faculty

Professors

Martha Archuleta, Associate Dean, Wasatch Front Region, Regional Campuses and Distance Education; nutrition education for low-income and minority populations, diabetes, interventions for overweight children

Jeffery R. Broadbent, food science, microbial genetics

Charles E. Carpenter, food science, muscle biochemistry and physiology, meat processing

Nedra K. Christensen, nutrition, dietetics

Daren P. Cornforth, food science, meat and muscle chemistry

Conly L. Hansen, food science, food engineering

Michael Lefevre, nutrition

Donald J. McMahon, food science, dairy chemistry and technology

Ronald G. Munger, nutrition, epidemiology, and public health

Iika Nemere, nutrition, molecular nutrition

Clinical Professors

Janet B. Anderson, dietetics, food science management, food safety

Noreen B. Schvaneveldt, dietetics, clinical nutrition

Adjunct Professors

Gary M. Chan, pediatrics

Timothy A. Gilbertson, biology

Craig J. Oberg, microbiology

Professors Emeritus

Deloy G. Hendricks

Georgia C. Lauritzen

Von T. Mendenhall

Gary H. Richardson

Ann W. Sorenson

Bonita W. Wyse

Associate Professor

Marie K. Walsh, food science, dairy chemistry

Clinical Associate Professor

Tamara S. Vitale, dietetics, community nutrition

Adjunct Associate Professors

Barbara Chatfield, pediatric pulmonology

Paul A. Savello, dairy processing and food science, food laws and regulations, milk ultra high temperature and whitening

Adjunct Clinical Associate Professor

Heidi Reese LeBlanc, dietetics

Adjunct Research Associate Professor

Laurie J. Moyer-Mileur, pediatric nutrition

Associate Professor Emeritus

Charlotte P. Brennand

Assistant Professors

Korry Hintze, nutrition, nutrient-gene interaction, iron metabolism, selenium metabolism

Silvana Martini, characterization of lipids, sensory evaluation of foods, product development

Brian A. Nummer, biosecurity, food service, food safety, food process development

Robert E. Ward, bioactive nutrients, food and lipid analysis

Heidi J. Wengreen, nutrition, clinical dietetics, epidemiology

Siew Sun Wong, nutrition, nutrition education program, epidemiology

Research Assistant Professor

Dong Chen, molecular structure and biochemistry

Clinical Assistant Professor

Megan Bunch Smith, dietetics

Adjunct Research Assistant Professors

Thomas Jared Bunch, dietetics

Catherine McDonald, pediatric nutrition, clinical dietetics

Adjunct Clinical Assistant Professors

W. Daniel Jackson, pediatrics

Ann M. Mildenhall, dietetics, director of dietetic internship program

Julianne Steiner, dietetics, diabetes

Clinton Wasuita, dietetics

Adjunct Assistant Professor

Theodore Liou, nutrition, internal medicine, pulmonology

Assistant Professor Emeritus

Frances G. Taylor

Clinical Instructors

Marlene Israelsen, dietetics, nutrition

Janette Smith, dietetics, nutrition

Adjunct Clinical Instructors

Sarah Gunnell, dietetics

Kim McMahon, dietetics/food service management

Cynthia Mitchell, dietetics management

Jennie Oler, Assistant Director of Dietetic Internship Program; dietetics

Rachel T. Rood, dietetics

Pauline Williams, dietetics

Lecturers

Karin Allen, food science

Randall T. Bagley, dairy processing

Dick R. Whittier, meat processing

Adjunct Clinical Lecturer

Suzette Holt, dietetics

Course Descriptions

Nutrition and Food Sciences (NFS), [click here](#)