

# GRADUATE PROGRAM

Michael Pagliassotti, Department Head

FAX: (970) 491-3875

Tele: (970) 491-3819

E-mail: Paula.Coleman@colostate.edu

www.fshn.chhs.colostate.edu

Food Science and Human Nutrition Department

Colorado State University

Gifford Building, Room 234

Fort Collins, Colorado 80523-1571

Paula Coleman, Graduate Programs, Administrative Asst.

Garry Auld, Graduate Program Director

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## MASTER OF SCIENCE PROGRAMS

### FOOD SCIENCE AND NUTRITION MASTER'S PROGRAM

The Master of Science in Food Science and Human Nutrition with an area of interest in Nutrition includes work in advanced nutrition science, supporting basic and applied sciences and the communication of nutrition principles in the community. Ultimately this area focuses on the relationship between nutrition and health. Thesis (Plan A) and non-thesis (Plan B) options are available. The program of study may be directed toward nutritional sciences, community nutrition or food science and food science/food safety. A minimum of 35 credits is required for an M.S.

The Master of Science degree in Food Science and Human Nutrition with an area of interest in Food Science includes advanced studies oriented toward meat and cereal science, food microbiology, food preservation and safety, and health properties of foods and food components. Thesis (Plan A) and non-thesis (Plan B) options are available. The program of study may be directed toward nutritional sciences, community nutrition or food science and food science/food safety. A minimum of 35 credits is required for an M.S.

Students with a B.S. degree in nutrition, food science, or a basic science such as biology, chemistry, microbiology, or physiology usually have an appropriate foundation for a graduate program in human nutrition. Students from the social sciences usually need to make up deficiencies in physiology, general chemistry, organic chemistry, biochemistry, and college algebra prior to admission.

*NOTE: Below find examples of our MS Nutrition and Food Science programs of study.*

### NUTRITION

#### **Core Courses (11 credits)**

		<b>Credits</b>
FSHN 550	Advanced Nutritional Sciences I	3
FSHN 551	Advanced Nutritional Sciences II	3
FSHN 640	Selected Topics in Nutritional Epidemiology	2
FSHN 650A	Recent Developments in Human Nutrition; Micronutrients	2
or FSHN 650B	Recent Developments in Human Nutrition; Macronutrients	2
FSHN 692	Graduate Seminar	1

#### **Statistic Courses (3-4 credits)**

EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
FSHN 580A1	Research Design	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
VS 562	Applied Data Analysis	3

<b>Elective Courses (10-17 credits)</b>		<b>Credits</b>
BC 401	Comprehensive Biochemistry I	3
BC 403	Comprehensive Biochemistry II	3
BC 465	Molecular Regulation of Cell Function	3
BC 517	Metabolism	3
BC 565	Molecular Regulation of Cell Function	4
BC 663	Gene Expression	2
BIOM 526	Biological Physics	3
BMS 430	Endocrinology	3
BMS 500	Mammalian Physiology I	4
BMS 501	Mammalian Physiology II	4
BMS 505	Neuronal Circuits, Systems and Behavior	3
BMS 610A	Managing a Career in Science: Survival Skills for Coursework	1
BMS 631	Mechanisms of Hormone Action	2
BMS 632	Metabolic Endocrinology	2
BZ 455	Human Heredity and Birth Defects	3
EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
ERHS 542	Biostatistical Methods for Qualitative Data	3
ERHS 544	Biostatistical Methods for Quantitative Data	3
ERHS 567	Cell and Molecular Toxicology Techniques	3
ERHS 611	Cancer Genetics	2
FSHN 445	Early Childhood Health, Safety and Nutrition	3
FSHN 496A-I	Group Study in Dietetics & Nutrition (multiple courses)	1x
FSHN 500	Food Systems, Nutrition and Food Security	2
FSHN 520	Advanced Medical Nutrition Therapy	3
FSHN 525	Nutrition Education Theories and Practice	2
FSHN 540	Nutrigenomics and Advanced Lipid Metabolism	3
FSHN 578	Bioactives and Probiotics for Health	2
FSHN 580A1	Research Design	3
FSHN 580A2	Responsible Conduct of Research	1
FSHN 580A3	Grant Writing	2
FSHN 620	Community Nutrition Planning and Evaluation	3
FSHN 628	Advanced Nutrition Counseling Techniques	2
FSHN 630	Integrative Exercise and Nutrition	3
FSHN 650A	Recent Developments in Human Nutrition; Micronutrients	2
FSHN 650B	Recent Developments in Human Nutrition; Macronutrients	2
FSHN 650C	Recent Developments in Human Nutrition; Genomics, Proteomics, Metabolomics	2
FSHN 660	Women's Issues Throughout the Life Cycle	3
FSHN 661	International Nutrition	2
FSHN 670	Laboratory Methods in Nutrition	3
FSHN 686A	Practicum: Counseling	1-3
FSHN 686B	Practicum: Nutrition	1-3
FSHN 695B	Independent Study: Nutrition	1-3
FSHN 700	Cellular Nutrition	2
FSHN 750	Nutritional Basis of Chronic Disease	2
FSHN 792	Research Seminar	1
FSHN 795	Independent Study	1-4
FTEC 570	Food Product Development	2
FTEC 578	Bioactives and Probiotics for Health	3
GRAD 792	Seminar on College Teaching	2
HDFS 608	Program Planning and Implementation	3
HES 603	Advanced Topics in Exercise Physiology	3
HES 610	Exercise Bioenergetics	3

HES 630	Integrative Exercise and Nutrition Metabolism	3
HORT 579	Metabolomics Methods and Analysis	2
JTC 614	Public Communication Campaigns	3
JTC 630	Health Communications	3
JTC 661	Information Design	3
JTC 662	Communicating Science and Technology	3
MIP 540	Biosafety in Research Laboratories	2
MIP 555	Principles and Mechanisms of Disease	3
MIP 612	Applied Immunology	3
MIP 614	Medical Microbiology	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
RRM 604	Research Methods in Food and Nutrition	3
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
VS 562	Applied Data Analysis	3

**Research/Thesis – (4-10 credits) Credits**

FSHN 699	Plan A Thesis	10
FSHN 698	Plan B Research	4

**Minimum credits required 35**

**FOOD SCIENCE**

**Core Courses (12 credits) Credits**

FTEC 570	Food Product Development	2
FTEC 572	Food Biotechnology	2
FTEC 574	Current Issues in Food Safety	2
FTEC 576	Cereal Science	2
FTEC 578	Bioactives and Probiotics for Health	3
FSHN 692	Graduate Seminar	1

**Statistics / Research Methods Courses (3-4 credits)**

EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
FSHN 580A1	Research Design	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
VS 562	Applied Data Analysis	3

**Elective Courses (9-16 credits) Credits**

ANEQ 565	Interpreting Animal Science Research	3
ANEQ 567	Meat Safety, HACCP and TQM	2
ANEQ 660	Advanced Meat Science	3
BC 463	Molecular Genetics	4
BC 513	Enzymology	1
BC 517	Metabolism	2
BC 565	Molecular Regulation of Cell Function	4
BC 655A	Advanced Topics in Cell Regulation: Microscopic	2
BC 665B	Advanced Topics in Cell Regulation: Modern	2

BC 701	Grant Proposal Writing and Reviewing	1
BMS 500	Mammalian Physiology II	4
BMS 501	Mammalian Physiology I	4
CBE 504	Fundamentals of Biochemical Engineering	3
CHEM 431	Instrumental Analysis	4
EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
ERHS 510	Cancer Biology	3
ERHS 611	Cancer Genetics	2
FSHN 540	Nutrigenomics and Advanced Lipid Metabolism	3
FSHN 550	Advanced Nutritional Science I	3
FSHN 551	Advanced Nutritional Science II	3
FSHN 580A1	Research Design	3
FSHN 580A2	Responsible Conduct of Research	1
FSHN 580A3	Grant Writing in Nutritional Science	2
FSHN 640	Selected Topics in Nutritional Epidemiology	2
FSHN 650A	Recent Developments in Human Nutrition; Micronutrients	2
FSHN 650B	Recent Developments in Human Nutrition; Macronutrients	2
FSHN 650C	Recent Developments in Human Nutrition; Genomics, Proteomics, Metabolomics	2
FSHN 661	International Nutrition	2
FSHN 695A	Independent Study: Food Science	1-3
FSHN 696A	Group Study: Food Science	1-3
HORT 401	Medicinal and Value-Added Uses of Plants	3
HORT 675	Plant Stress Physiology	3
JTC 662	Communicating Science & Technology	3
MIP 334	Food Microbiology	3
MIP 335	Food Microbiology Lab	2
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
MIP 533	Epidemiology of Infectious Diseases/Zoonoses	3
MIP 555	Principles and Mechanisms of Disease	3
MIP 624	Advanced Topics in Microbial Ecology	2
MIP 651	Immunobiology	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
SOCR 755	Advanced Soil Microbiology	3
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
VS 562	Applied Data Analysis	3
<b>Research/Thesis (4-10 credits)</b>		<b>Credits</b>
FTEC 699	Plan A Thesis	10
FTEC 698	Plan B Research	4
<b>Minimum credits required</b>		<b>35</b>

**INTERDISCIPLINARY STUDIES PROGRAM - FOOD SCIENCE/SAFETY:**

The interdisciplinary graduate research and education program is a cooperative effort offered by faculty in seven departments: Food Science and Human Nutrition; Animal Sciences; Soil and Crop Sciences; Horticulture and Landscape Architecture; Environmental and Radiological Health Sciences; Microbiology, Immunology and Pathology; and Clinical Sciences. The international reputation of the faculty members and their ability to attract strong extramural support for research in the areas of food science and food safety resulted in the creation of this interdisciplinary program. Faculty research interests are focused in

food microbiology, food safety education, food processing and integrated production/processing. Students interested in the safety and further processing of foods and commodities are encouraged to apply. Thesis (Plan A) and non-thesis (Plan B) options are available.

Students can apply and be admitted into one of the participating departments and take part in Program activities. Student interactions with faculty from more than one department are strongly encouraged. Graduate programs are customized to fit a student's interests and long-term objectives. Basic training in the food sciences comes from an integrated first-year curriculum featuring core courses in food science, microbiology, nutrition and commodity production. Opportunities exist for students to rotate through various laboratories. Students also participate in a weekly interdisciplinary group-study that includes papers given by students, post docs, participating faculty and distinguished visiting scientists, along with visits to member laboratories. The group-study course is designed to enhance interaction and facilitate research opportunities among the food science/safety community, including students, faculty, postdoctoral fellows and staff and may be offered by the participating departments on a rotational basis.

The student receives a degree from their home department and a transcript endorsement indicating the student has successfully completed the requirements of the Interdisciplinary Studies Program in Food Science/Safety, which will become part of the student's official record.

Students who wish to pursue the Interdisciplinary Studies Program in Food Science/Safety at the graduate level must declare their intent with Dr. Doreene Hyatt, Program Chair. All students in the program will have taken MIP 334, Food Microbiology, or its equivalent as a prerequisite, FTEC 400, Food Safety, at least one credit of FSHN 696A, Group Study--Food Science, a minimum of 6 credits (2 prefixes) from the approved list of supporting courses below, and complete a thesis or dissertation (in their home department), whose proposal has been approved by the Faculty Advisory Board for the Interdisciplinary Studies Program in Food Science/Safety. The Faculty Advisory Board shall also approve the list of supporting courses taken by the student in fulfillment of the Interdisciplinary Studies Program.

Students will take at least six credits from the following courses or additional courses approved by the Faculty Advisory Board. These courses must include at least 2 prefixes from the collaborating Departments (FTEC/FSHN, ANEQ, SOCR, HORT, ERHS, MIP, VM/VS).

#### **PROGRAM OF STUDY (Interdisciplinary Studies Program – Food Science/Safety Master's Program)**

<b>Supporting Courses</b>		<b>Credits</b>
FTEC 570	Food Product Development (FTEC 447)	2**
FTEC 572	Food Biotechnology (MIP 334)	2**
FTEC 576	Cereal Science (FTEC 447)	2**
FTEC 578	Bioactives and Probiotics for Health (FTEC 447 or CHEM 245 or CHEM 341)	3**
MIP 335	Food Microbiology Laboratory (MIP 301 or MIP 302)	2
MIP 443	Microbial Physiology (MIP 300; BC 351 or BC 401)	4
MIP 450	Microbial Genetics (MIP 300; BC 351 or BC 401 or concurrent reg.)	3
MIP 550	Microbial and Molecular Genetics Laboratory (MIP 301 or MIP 302; MIP 450, or written consent of instructor)	4
MIP 624	Microbial Ecology (MIP 300 or relevant ecology course)	2
MIP/VS 533	Epidemiology of Infectious Diseases/Zoonoses (MIP 300)	3
ERHS 532	Epidemiologic Methods (ERHS 307 or STAT 307)	3
SOCR 755	Advanced Soil Microbiology (MIP 624 or SOCR 455)	3
HORT 401	Medicinal and Value-added Uses of Plants (BZ 120 or MATH100; CHEM107 and CHEM108)	3
HORT 675	Plant Stress Physiology (BZ 440)	3
ANEQ 567	Meat Safety, HACCP, TQM (written consent of instructor)	2
ANEQ 565	Interpreting Animal Science Research (ANEQ 100)	3
ANEQ 660	Advanced Meat Science (ANEQ 360 or ANEQ 422 or FSHN 350)	3
VM 648	Food Animal Production and Food Safety (VM 601)	2
VS/AGRI 570	Issues in Animal Agriculture	2

<b>Research</b>		<b>Credits</b>
Plan A/FTEC 699	Thesis-Food Science	10
Plan B/FTEC 698	Research-Food Science	4
<b>Minimum credits required</b>		<b>35</b>

<sup>1</sup>Possible Statistics courses – STAT 511, STAT 512, EDRM 600, EDRM 606, EDRM 704, EDRM 705, VS 562

\*\*Required in the Department of Food Science and Human Nutrition

### **COORDINATED M.S./INTERNSHIP PROGRAM IN DIETETICS:**

The Coordinated M.S./Internship Program provides the didactic requirements and the supervised practice component of the R.D. requirements. **Students can apply into the program only after they have completed one semester of M.S. coursework in the Department.** This program is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND). Students will complete the M.S. requirements for the Community Nutrition or Nutritional Science option. This program is a Plan B (non-thesis) option. No more than six students are accepted into the Coordinated Program annually.

\*\*The Department also has an ACEND accredited DPD program and provides assistance to students interested in obtaining the Academy of Nutrition and Dietetics didactic (DPD) requirements. The DPD requirements are generally met by completing the undergraduate program in dietetics; however, it is possible to complete many of the course requirements in conjunction with the graduate program. To obtain information about the Coordinated M.S./Internship program, contact **Dr. Leslie Cunningham-Sabo, Food Science and Human Nutrition Department, Colorado State University, Fort Collins, CO 80523-1571. Email: [Leslie.Cunningham-Sabo@colostate.edu](mailto:Leslie.Cunningham-Sabo@colostate.edu)**

### **GP IDEA ON-LINE M.S. DIETETICS OPTION:**

This program is open to registered dietitians only. The GP Idea provides course work through the Great Plains Interactive Distance Education Alliance. Students apply to Colorado State University and take on-line courses offered by Colorado State University, Kansas State University, University of Kansas Medical Center, University of Kansas, Michigan State University, and South Dakota State University. The program is a 36 credit non-thesis masters program. To obtain information about the GP Idea M.S. in Dietetics, contact **Dr. Mary Harris, [Mary.Harris@colostate.edu](mailto:Mary.Harris@colostate.edu), Food Science and Human Nutrition Department, Colorado State University, Fort Collins, CO 80523-1571. This program is a Plan B (non-thesis) option.**

### **PROGRAM OF STUDY (GP Idea Plan B Masters of Science in Dietetics)**

#### **Minimum of 36 Credits required:**

New Courses online for GP Idea MS only:

<b>Courses (36 credits)</b>		<b>Credits</b>
FSHN 501	Research Methods	3
or EDRM 600	Introduction to Research Methods	
EDRM 701	Quantitative Research Methods	3
FSHN 503	Issues in Dietetics	3
FSHN 540	Nutrigenomics and Advanced Lipid Metabolism	3
FSHN 504	Micronutrients	3
<b>Suggested Elective Courses</b>		<b>Credits</b>
FSHN 505	Nutrition and Physical Activity in Aging	3
FSHN 506	Nutrition and Physical Performance	3
FSHN 507	Nutrition Education in the Community	3
FSHN 508	International Nutrition and World Hunger	3
FSHN 520	Advanced Medical Nutrition Therapy	3
FSHN 698BV	Research Paper	5
FSHN 692	Seminar	1

## **MASTER OF PUBLIC HEALTH – NUTRITION FOCUS:**

Please refer to the website address [www.colostate.edu/depts/psychology/gpph.shtml](http://www.colostate.edu/depts/psychology/gpph.shtml) for program and application information.

## **DOCTOR OF PHILOSOPHY PROGRAMS**

The Doctor of Philosophy in Food Science and Human Nutrition with an area of interest in Nutrition includes work in advanced nutrition science, supporting basic and applied sciences and the communication of nutrition principles in the community. Ultimately this area focuses on the relationship between nutrition and health.

The Doctor of Philosophy degree in Food Science and Human Nutrition with an area of interest in Food Science includes advanced studies oriented toward meat and cereal science, food microbiology, food preservation and safety, and health properties of foods and food components.

*NOTE: Below find examples of our PhD Nutrition and Food Science programs of study.*

### **NUTRITION**

#### **Core Courses (15 credits)**

		<b>Credits</b>
FSHN 550	Advanced Nutritional Sciences I	3
FSHN 551	Advanced Nutritional Sciences II	3
FSHN 580A2	Responsible Conduct of Research	1
FSHN 640	Selected Topics in Nutritional Epidemiology	2
FSHN 650A	Recent Developments in Human Nutrition; Micronutrients	2
or FSHN 650B	Recent Developments in Human Nutrition; Macronutrients	2
or FSHN 650C	Recent Developments in Human Nutrition; Genomics, Proteomics, Metabolomics	2
FSHN 692	Graduate Seminar	2
FSHN 792	Seminar – Research Topics in Nutrition	2

#### **Statistic Courses (6-8 credits)**

EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
FSHN 580A1	Research Design	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
VS 562	Applied Data Analysis	3

#### **Elective Courses (10-40 credits)**

		<b>Credits</b>
BC 401	Comprehensive Biochemistry I	3
BC 403	Comprehensive Biochemistry II	3
BC 465	Molecular Regulation of Cell Function	3
BC 517	Metabolism	3
BC 565	Molecular Regulation of Cell Function	4
BC 663	Gene Expression	2
BIOM 526	Biological Physics	3
BMS 430	Endocrinology	3
BMS 500	Mammalian Physiology I	4

BMS 501	Mammalian Physiology II	4
BMS 505	Neuronal Circuits, Systems and Behavior	3
BMS 610A	Managing a Career in Science: Survival Skills for Coursework	1
BMS 631	Mechanisms of Hormone Action	2
BMS 632	Metabolic Endocrinology	2
BZ 455	Human Heredity and Birth Defects	3
EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
ERHS 542	Biostatistical Methods for Qualitative Data	3
ERHS 544	Biostatistical Methods for Quantitative Data	3
ERHS 567	Cell and Molecular Toxicology Techniques	3
ERHS 611	Cancer Genetics	2
FSHN 445	Early Childhood Health, Safety and Nutrition	3
FSHN 496A-I	Group Study in Dietetics & Nutrition (multiple courses)	1x
FSHN 500	Food Systems, Nutrition and Food Security	2
FSHN 520	Advanced Medical Nutrition Therapy	3
FSHN 525	Nutrition Education Theories and Practice	2
FSHN 540	Nutrigenomics and Advanced Lipid Metabolism	3
FSHN 578	Bioactives and Probiotics for Health	2
FSHN 580A1	Research Design	3
FSHN 580A3	Grant Writing	2
FSHN 620	Community Nutrition Planning and Evaluation	3
FSHN 628	Advanced Nutrition Counseling Techniques	2
FSHN 630	Integrative Exercise and Nutrition	3
FSHN 650A	Recent Developments in Human Nutrition; Micronutrients	2
FSHN 650B	Recent Developments in Human Nutrition; Macronutrients	2
FSHN 650C	Recent Developments in Human Nutrition; Genomics, Proteomics, Metabolomics	2
FSHN 660	Women's Issues Throughout the Life Cycle	3
FSHN 661	International Nutrition	2
FSHN 670	Laboratory Methods in Nutrition	3
FSHN 686A	Practicum: Counseling	1-3
FSHN 686B	Practicum: Nutrition	1-3
FSHN 695B	Independent Study: Nutrition	1-3
FSHN 700	Cellular Nutrition	2
FSHN 750	Nutritional Basis of Chronic Disease	2
FSHN 795	Independent Study	1-4
FTEC 570	Food Product Development	2
FTEC 578	Bioactives and Probiotics for Health	3
GRAD 792	Seminar on College Teaching	2
HDFS 608	Program Planning and Implementation	3
HES 603	Advanced Topics in Exercise Physiology	3
HES 610	Exercise Bioenergetics	3
HES 630	Integrative Exercise and Nutrition Metabolism	3
JTC 614	Public Communication Campaigns	3
JTC 630	Health Communications	3
JTC 661	Information Design	3
JTC 662	Communicating Science and Technology	3
MIP 540	Biosafety in Research Laboratories	2
MIP 555	Principles and Mechanisms of Disease	3
MIP 612	Applied Immunology	3
MIP 614	Medical Microbiology	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
RRM 604	Research Methods in Food and Nutrition	3



STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	
VS 562	Applied Data Analysis	3
<b>Research/Thesis</b>		<b>Credits</b>
FSHN 799		10-42
	<b>Minimum credits required</b>	<b>72</b>
	<b>Minimum credits required with a masters in same field of study</b>	<b>42</b>

## **FOOD SCIENCE**

<b>Core Courses (16 credits)</b>		<b>Credits</b>
FTEC 570	Food Product Development	2
FTEC 572	Food Biotechnology	2
FTEC 574	Current Issues in Food Safety	2
FTEC 576	Cereal Science	2
FTEC 578	Bioactives and Probiotics for Health	3
FSHN 580A2	Responsible Conduct of Research	1
FSHN 692	Graduate Seminar	2
FSHN 792	Seminar – Research Topics in Nutrition	2
<b>Statistics / Research Methods Courses (3-4 credits)</b>		
EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
FSHN 580A1	Research Design	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
VS 562	Applied Data Analysis	3
<b>Elective Courses (10-38 credits)</b>		<b>Credits</b>
ANEQ 565	Interpreting Animal Science Research	3
ANEQ 567	Meat Safety, HACCP and TQM	2
ANEQ 660	Advanced Meat Science	3
BC 463	Molecular Genetics	4
BC 513	Enzymology	1
BC 517	Metabolism	2
BC 565	Molecular Regulation of Cell Function	4
BC 655A	Advanced Topics in Cell Regulation: Microscopic	2
BC 665B	Advanced Topics in Cell Regulation: Modern	2
BC 701	Grant Proposal Writing and Reviewing	1
BMS 500	Mammalian Physiology II	4
BMS 501	Mammalian Physiology I	4
CBE 504	Fundamentals of Biochemical Engineering	3
CHEM 431	Instrumental Analysis	4
EDRM 600	Introduction to Research Methods	3
EDRM 606	Principles: Quantitative Data Analysis	3
EDRM 704	Qualitative Research	3
EDRM 705	Qualitative Data Analysis	3
ERHS 510	Cancer Biology	3

ERHS 611	Cancer Genetics	2
FSHN 500	Food Systems, Nutrition and Food Security	2
FSHN 540	Nutrigenomics and Advanced Lipid Metabolism	3
FSHN 550	Advanced Nutritional Science I	3
FSHN 551	Advanced Nutritional Science II	3
FSHN 580A1	Research Design	3
FSHN 580A3	Grant Writing in Nutritional Science	2
FSHN 640	Selected Topics in Nutritional Epidemiology	2
FSHN 650A	Recent Developments in Human Nutrition; Micronutrients	2
FSHN 650B	Recent Developments in Human Nutrition; Macronutrients	2
FSHN 650C	Recent Developments in Human Nutrition; Genomics, Proteomics, Metabolomics	2
FSHN 661	International Nutrition	2
FSHN 695A	Independent Study: Food Science	1-3
FSHN 696A	Group Study: Food Science	1-3
HORT 401	Medicinal and Value-Added Uses of Plants	3
HORT 675	Plant Stress Physiology	3
JTC 662	Communicating Science & Technology	3
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
MIP 533	Epidemiology of Infectious Diseases/Zoonoses	3
MIP 555	Principles and Mechanisms of Disease	3
MIP 624	Advanced Topics in Microbial Ecology	2
MIP 651	Immunobiology	3
PSY 652	Methods of Research in Psychology I	4
PSY 653	Methods of Research in Psychology II	4
SOCR 755	Advanced Soil Microbiology	3
STAT 511A	Design and Data Analysis for Researchers I: R Software	4
STAT 511B	Design and Data Analysis for Researchers I: SAS Software	4
STAT 512	Design and Data Analysis for Researchers II	4
VS 562	Applied Data Analysis	3
<b>Dissertation and Research</b>		<b>Credits</b>
FTEC 799	Dissertation and Research	10-42
<b>Minimum credits required</b>		<b>72</b>
<b>Minimum credits required with a masters in same field of study</b>		<b>42</b>

## **DEPARTMENTAL RESEARCH and RESEARCH INTERESTS**

Research interests in nutrition science include nutritional regulation of liver, muscle and adipose tissue gene expression, nutrition in pregnancy, nutrition in exercise and energy metabolism, gastroenterology and nutrition, obesity, type 2 diabetes, nutritional epidemiology, nutrition education, community nutrition, and food safety education. In the food sciences area, research interests include sensory and objective measurement of food flavor, food safety and preservation.

**Note:** Affiliate Faculty members at the University of Colorado Health Sciences Center and the AMC Cancer Research Center are involved with other nutrition research areas not listed below. For additional information on these research areas, contact the Department of Food Science and Human Nutrition.

**Garry Auld, Ph.D.** – Community and nutrition education programs; program evaluation (quantitative and qualitative); sustainable food system issues; interventions and assessments of limited resource audiences.

**John Avens, Ph.D.** - Food safety, food microbiology.

**Susan Baker, Ed.D.** - Community-based nutrition education; breastfeeding promotion and support; food resource management; food security; limited-resource families (Expanded Food and Nutrition Education); preschool and K-3 youth, pregnant adolescents.

**Laura Bellows, Ph.D.** – Nutrition education; public health nutrition; childhood obesity; early childhood audiences; health promotion and disease prevention; and physical activity.

**Marisa Bunning, Ph.D.** – Food safety communication; post-harvest produce safety and quality; consumer food handling behavior.

**Kimberly Cox-York, Ph.D.** – Adipose tissue clinical studies for aging and metabolism. Responsible conduct of research.

**Leslie Cunningham-Sabo, Ph.D., R.D.** – Public health nutrition, food behavior change of children and adults through cooking, minority populations, community-based participatory research, translation of research to practice.

**Michelle Foster, Ph.D.** – Adipose tissue regulation (metabolic and adipokine); diet-induced obesity and hepatic steatosis; visceral fatty acids and insulin resistance; adipose tissue removal-induced metabolic improvements.

**Christopher Gentile, Ph.D.** – Dietary regulation of cardiovascular function. Mechanisms of diet-induced cardiovascular abnormalities.

**Mary Harris, Ph.D., R.D., BC-ADM** - Lipid metabolism, omega-3 fatty acids in pregnancy and cognitive development. Clinical Nutrition: Diabetes and kidney disease.

**Sarah Johnson, Ph.D., R.D.N.** – Functional foods, bioactive compounds, and dietary supplements; healthy aging; menopause; vascular function; cardiometabolic health; cancer prevention; clinical research.

**Soo Kang, Ph.D.** – Hospitality marketing, consumer behavior.

**Chris Melby, Dr.P.H.** – Interaction of nutrition and exercise on features of the metabolic syndrome; energy balance and body weight regulation.

**Jeff Miller, Ph.D.** – Food and identity; food and the human voice; heritage tourism; hospitality education; food service management; sustainable food initiatives.

**Michael Pagliassotti, Ph.D.** – Dietary nutrients, obesity and non-alcoholic fatty liver disease; lipids and endoplasmic reticulum stress; fructose and hepatic insulin resistance.

**David A. Sampson, Ph.D.** – International Nutrition

**Martha Stone, Ph.D.** - Food product development, cereal grains.

**Tiffany Weir, Ph.D.** – Effects of dietary components on gut microflora composition, microbial metabolism of plant compounds, fermented foods, intestinal health, food safety.

## **APPLICATION PROCEDURES**

Application forms for admission to the Graduate School may be made on-line at <http://gradadmissions.colostate.edu/apply>. All application materials should be submitted directly to the Office of Admissions at:

Graduate Admissions  
Colorado State University – Office of Admissions  
1062 Campus Delivery  
Fort Collins, CO 80523-1062

For questions, contact: Paula Coleman, [Paula.Coleman@colostate.edu](mailto:Paula.Coleman@colostate.edu), (970) 491-3819.

**Deadline: We offer fall admission with an application deadline of February 1. Applicants should submit: one official transcript from all colleges/universities attended, three letters of recommendation, a one-page statement that addresses your professional goals, resume, and Graduate Record Examination (GRE) test scores. (Official test scores should be submitted to Colorado State University code # 4075.)**

**International applicants should submit all required documents listed above, statement on financial resources, and TOEFL or IELTS test results to the Office of Admissions by the February 1<sup>st</sup> Department deadline.**

**PLEASE NOTE: Coordinated M.S./Internship positions are awarded once per year in December and up to six current students are then accepted into this program after completion of one semester of coursework.**

For those applicants submitting transcripts prior to graduation, it is important to include a list of all courses being taken or that will be taken during the senior year. Once courses are completed and degrees received, new official transcripts will be required. Prerequisites, GRE and TOEFL or IELTS exams should be completed prior to application.

## **FINANCIAL AID**

The department offers financial aid in the form of research assistantships, teaching assistantships and scholarships. Assistantships are based on half-time work (20 hrs. /week) and pay a monthly stipend. Teaching assistantships for U.S. students are based on 9- and 12-month appointments, respectively, and may carry a waiver of out-of-state tuition the first year and in-state tuition the second and any remaining years. Research assistantships vary with individual research projects. Assistants pay general and technology fees of approximately \$857/semester, and a facility fee of \$20.75/credit/semester. The availability of assistantships or other forms of financial aid in general varies from semester to semester and year-to-year depending on when present students complete their studies. Assistantships are generally more available fall semester than in the spring.

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Colorado State University is an equal opportunity/affirmative action institution and complies with all federal and Colorado state laws, regulations, and executive orders regarding affirmative action requirements in all programs. The Office of Equal Opportunity is located in 101 Student Services. In order to assist Colorado State University in meeting its affirmative action responsibilities, ethnic minorities, women, and other protected class members are encouraged to apply and to so identify themselves.

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## **Colorado State University**

Colorado State University is the land-grant university in Colorado and is located in Fort Collins 65 miles north of Denver. Fort Collins is a lovely university community of approximately 134,000 people located at the base of the Colorado Front Range. Rocky Mountain National Park and many other summer and winter recreational areas are short drives from Fort Collins. There are approximately 25,000 on-campus students attending Colorado State.

The Department of Food Science and Human Nutrition is located in a well-equipped building which is located in the basic science area of the campus. Over 20,000 square feet of space are assigned to the department. This includes faculty and graduate assistant offices, teaching, research and computer laboratories, and instrument and animal rooms. Additional laboratories and facilities for food science research are located in the Gifford Building, and the Food Science Pilot Plant is located at the Agricultural Research, Development, and Education Center (ARDEC).

Over 500 undergraduate men and women major in nutrition and food science or restaurant and resort management. The department has an additional 95 M.S. and Ph.D. students. The University of Colorado-Colorado State University Nutrition Consortium provides opportunities for students to work on research projects at the University of Colorado Health Sciences Center in Denver as well as at Colorado State University. Faculty and students in the Department of Food Science and Human Nutrition sponsor the annual Lillian Fountain Smith Nutrition Education Conference each summer.

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03/24/17

