



DEPARTMENT OF
HIGHER EDUCATION &
WORKFORCE DEVELOPMENT

New Program Report

Date Submitted:

03/29/2024

Institution

Missouri Southern State University

Site Information

Implementation Date:

8/1/2024 12:00:00 AM

Added Site(s):

Selected Site(s):

Missouri Southern State University, 3950 E. Newman Road, Joplin, MO, 64801-1595

CIP Information

CIP Code:

011001

CIP Description:

A program that focuses on the application of biological, chemical, and physical principles to the study of converting raw agricultural products into processed forms suitable for direct human consumption, and the storage of such products. Includes instruction in applicable aspects of the agricultural sciences, human physiology and nutrition, food chemistry, agricultural products processing, food additives, food preparation and packaging, food storage and shipment, and related aspects of human health and safety including toxicology and pathology.

CIP Program Title:

Food Science

Institution Program Title:

Food Science and Nutrition

Degree Level/Type

Degree Level:

Bachelor's Degree

Degree Type:

Bachelor of Science

Options Added:

Collaborative Program:

N

Mode of Delivery

Current Mode of Delivery

Classroom

Student Preparation

Special Admissions Procedure or Student Qualifications required:

n/a



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Specific Population Characteristics to be served:

n/a

Faculty Characteristics

Special Requirements for Assignment of Teaching for this Degree/Certificate:

All faculty will meet or exceed HLC faculty qualification guidelines. Full-time faculty will hold terminal degrees in the discipline or a closely related field.

Estimate Percentage of Credit Hours that will be assigned to full time faculty:

A minimum of 97% of Food Science and Nutrition Course work will be taught by full-time faculty.

Expectations for professional activities, special student contact, teaching/learning innovation:

Faculty are expected to engage in standard institutional teaching, scholarship, and service activities.

Faculty will also be expected to participate in annual conferences, advising students, developing food science lab spaces, creating immersive experiences within the curriculum and developing industry contracts.

Student Enrollment Projections Year One-Five

Year 1	Full Time: 3	Part Time: 1	
Year 2	Full Time: 6	Part Time: 2	
Year 3	Full Time: 9	Part Time: 4	Number of Graduates: 5
Year 4	Full Time: 12	Part Time: 7	
Year 5	Full Time: 15	Part Time: 8	Number of Graduates: 15

Percentage Statement:

n/a

Program Accreditation

Institutional Plans for Accreditation:

In year five, the Food Science & Nutrition program will begin working toward accreditation through the Institute of Food Technology Higher Education Review Board.

Program Structure

Total Credits:

120

Residency Requirements:

30 hours

General Education Total Credits:

42

Major Requirements Total Credits:

69

Course(s) Added

COURSE NUMBER	CREDITS	COURSE TITLE
PHYS 150	4	Elementary College Physics
FSN 101	3	Introduction to Food Science



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CHEM 301	5	Organic Chemistry
FSN 430	4	Food Microbiology
KINE 386	3	Food Preparation
FSN 310	3	Principles of Food Processing
CHEM 142	5	General Chemistry II
BIO 231	5	General & Medical Microbiology
MET 201	3	Robotics
EH 377	3	Food Safety
CHEM 350	3	Biochemistry I
KINE 385	3	Nutrition for Human Development
MATH 135	3	Trigonometry
BIO 389	3	Fundamentals of Experimental Design & Statistics
FSN 220	3	Intro to Food & Agriculture Law
INTS 310	3	Food, Culture & Society

Free Elective Credits:

6

Internship or other Capstone Experience:

3 hour internship

Assurances

I certify that the program is clearly within the institution's CBHE-approved mission. The proposed new program must be consistent with the institutional mission, as well as the principal planning priorities of the public institution, as set forth in the public institution's approved plan or plan update.

I certify that the program will be offered within the proposing institution's main campus or CBHE-approved off-site location.

I certify that the program will not unnecessarily duplicate an existing program of another Missouri institution in accordance with 6 CSR 10-4.010, subsection (9)(C) Submission of Academic Information, Data and New Programs.

I certify that the program will build upon existing programs and faculty expertise.

I certify that the program can be launched with minimal expense and falls within the institution's current operating budget.

I certify that the institution has conducted research on the feasibility of the proposal and it is likely the program will be successful. Institutions' decision to implement a program shall be based upon demand and/or need for the program in terms of meeting present and future needs of the locale, state, and nation based upon societal needs, and/or student needs.

Contact Information

First and Last Name: WENDY
MCGRANE



New Program Report

Email: mcgrane-w@mssu.edu

Phone: 417-625-9801

MISSOURI SOUTHERN STATE UNIVERSITY
School Curriculum Oversight Committee/Academic Policies Committee

Proposal for a NEW MAJOR or CERTIFICATE

1. School: HLSE Department: Kinesiology Date: 1.5.24
2. Title: Food Science and Nutrition _____ Course #: CIP Code: 01.1001
3. New Major or Certificate: Major or New Option: in Food Science and Nutrition
4. Date first offered: Fall 2024 .

Attach information for items 5-12 as needed.

5. Describe the need for this new major including evidence of student demand for the program and market or societal need for the skills being developed.

Food Science and Nutrition is a high-opportunity field, reflecting the growing interest in nutrition, food safety, sustainability of the food system and evolving technologies in food processing. In 2022, the White House held the conference on Hunger, Nutrition and Health to highlight the investment in the US food system. The USDA and FDA have increased their commitment to improve food safety and labeling of food products. Future policies are projected to spur increased manufacturers' investments in the food system.

Employment in the field of Food Science and Nutrition is projected to grow in Missouri 14% by 2030, with a median annual wage of \$65,190. Ten food manufacturers are in the Joplin area alone with many more located in Northwest Arkansas. Nationally, job growth in the field increased by 13% between 2021 and 2022 with 3,201 jobs in the field.

6. Is the major interdisciplinary? Yes x, No . If so, has it been approved by all departments concerned? Yes x, No . If Interdisciplinary, how will coordination between the departments be accomplished?

Active communication among departments through scheduling of courses and course requirements.

7. Are there similar programs offered at other Missouri institutions? Yes x, No . If so, how is this program unique or different from existing programs?

Currently, only the University of Missouri, Columbia offers a Food Science degree in the state of Missouri. Other institutions in our region with a food science degree are Kansas State University, University of Arkansas, Iowa State, Purdue University, University of Illinois Urbana, Champaign. All regional universities with a Food Science degree are RI, land-grant institutions. This program is unique in that it has smaller class sizes, lower faculty-to-student ratio, immersive learning opportunities, and provides close ties to local food industries.

8. Describe the curriculum requirements for the major. Attached
9. What are the student learning objectives for the program?

Potential 4-year plan for Food Science Degree

Fall

BIO 110	Principles of Biology I with lab (Ged Ed Area 3B)	4
<i>FSN 101</i>	<i>Introduction to Food Science</i>	3
ENG 101	College Composition I (Gen Ed Area 2A)	3
MAT 130	College Algebra (Gen Ed Area 4)	3
KINE 103	Lifetime Wellness (Gen Ed Area 5D)	2
UE 100	University Experience	1
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TOTAL		16

Spring

MET 210	Robotics	3
MAT 135	Trigonometry	3
<i>FSN 220</i>	<i>Intro to Food & Agriculture Law</i>	3
PSC 120	American Government (GenED 1B)	3
ENG 102	College Composition II (Gen Ed Area 2A)	3
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TOTAL		15

Fall

PSY 100	General Psychology (Gen Ed Area 1A)	3
CHEM 151	General Chemistry 1 (GenEd3B)	5
KINE 385	Nutrition During the Lifespan	3
COMM 100	Oral Communication (Gen Ed Area 2B)	3
ECON 202	Microeconomics (GenEd 1)	3
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TOTAL		17

Spring

KINE 386	Food Preparation	3
CHEM 152	General Chemistry II	5
INTS 310	Food, Culture and Society (Gen Ed Area 5C?)	3
PHYS 160	Elementary College Physics 1	4
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TOTAL		15

Fall

EH 377	Food Safety	3
CHEM 301	Organic Chemistry 1	5
SPAN 100	Workplace & Travel Spanish (will fill Gen Ed area 5A)	3
<i>FSN 310</i>	<i>Principles of Food Processing</i>	3
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TOTAL		14

Spring

BIO 231	General and Medical Microbiology	5
BIO 389	Fundamentals of Exp Design and Statistics	3
HIST 140	Western Civ since 1660 (Gen Ed 5A)	3
<i>FSN</i>	<i>FSN Elective</i>	3
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TOTAL		14

Fall		
<i>FSN</i>	<i>FSN Elective</i>	3
<i>FSN 420</i>	<i>Food Packaging & Preservation</i>	3
<i>FSN 430</i>	<i>Food Microbiology</i>	4
CHEM 350	Biochemistry 1	3
TOTAL		13

Spring		
<i>FSN 410</i>	<i>Food Chemistry and Analysis</i>	4
<i>FSN</i>	<i>FS Elective</i>	3
	Fine Arts (will fill Gen Ed area 5B)	3
PSY 411	Sensation and Perception	3
FSN 491	Internship in Food Science and Nutrition	3
TOTAL		16

Overall Total **120 hours**

Choose 3 out of the 5 FSN elective courses

- FSN 350 Processing Muscle Foods
- FSN 360 Processing Dairy Foods
- FSN 370 Processing Cereal Grains
- FSN 380 Pet Food Processing
- FSN 390 Baking Science

MSSU New Program Proposal
Proposed Marketing Plan

Name of Program _Food Science and Nutrition

Department____Kinesiology_____

College _Health, Life Sciences, and Education__

Product

1. Describe the program in a way that would be understandable to potential students.

The Food Science and Nutrition program at MSSU offers a 4-year Bachelor of Science degree aimed at providing students with a comprehensive understanding of the intricate aspects of food science, nutrition, and human health. This program encompasses a multidisciplinary approach, drawing from various STEM fields such as biology, chemistry, physics, physiology, nutrition, microbiology, and biochemistry. The program integrates practical experience through internships, providing students with hands-on learning opportunities crucial for success in the industry. Students will have the opportunity to delve into the fundamental principles of food science, including food safety, processing, packaging, analysis, quality assurance, food policies and regulations. The completion of this degree program will allow students to apply critical thinking and analytical skills to identify problems in food and nutritional sciences, participating in the design and evaluation of solutions that advance the field. With smaller class sizes, a lower faculty-to-student ratio, immersive learning opportunities, and strong connections to local food industries, the program ensures a tailored educational experience.

Target Market

2. Indicate which type of students to which you feel this program will appeal?

Age:

Traditional 18-24 years- student athletes with eligibility remaining

Adult students over 24 years

Life Style:

Working professional

Returning military

Full time parent

Part-time worker

Other (please specify)- student-athletes with a year of eligibility left

Home Geography:

Local

Regional

National

International

What are the potential career paths for graduates of this program?

Food Safety Inspector, Food Quality Assurance, Food Scientist, Food Production Manager/Supervisor,

Will this program compete with other programs?

On campus (name which programs)

at other regional universities (name programs and universities)

University of Missouri, University of Arkansas, Kansas State University

Place

How will this program be delivered? Please give a brief explanation why this delivery method(s) was chosen.

traditional face-to-face – Most of the courses offered in this program will have a lab or immersive learning component. The courses will need to be in-person to provide these hands-on learning opportunities.

asynchronous online only

hybrid

synchronous online

Promotion

Personal selling (recruiting)

Identify at least three methods of recruiting for this program

- Posts through social media advertising the degree
- Visiting with high school counselors and Family and Consumer Science teachers
- Attending college career fairs
- Visiting local industry to share degree information with their current workforce

PR

Identify at least three ways you can increase awareness of this program (speak at civic organizations, press releases, etc.)

- Press Releases regarding the creation of the degree and student employment success within the degree
- Speak at industry events
- Social media posts
- Speaking to 4H clubs, and FACS clubs at local high schools

Advertising

Identify what you would want featured in advertising, such as tag lines, program's unique features, faculty expertise, or expect employer demand for graduates, etc.

- Tagline: The Future in Food Science and Nutrition is at MSSU
- Unique Features: With smaller class sizes, a lower faculty-to-student ratio, immersive learning opportunities, and strong connections to local food industries, the program ensures a tailored educational experience.
- Faculty: Experienced faculty in Food Science and Nutrition.

Given the Target Market you identified above, what would be the best media outlets to reach the students?

Promoted social media posts

What marketing materials would you like to develop?

Billboard designs, sponsored social media posts, handouts

What is your estimated budget to market this program for the first year?

\$500 from Kinesiology Activity Budget

\$500 from Kinesiology Department Budget

**MSSU Food Science & Nutrition
Student Learning Objectives**

Student Learning Outcomes	Objectives	Where and How measured	Expectations/ target	When Assessed	By Whom
<p>Apply knowledge gained in food chemistry, microbiology, engineering, and sensory evaluation to the development, processing, and preservation of safe, nutritious, and high-quality food products</p>	<ul style="list-style-type: none"> Students will demonstrate their comprehension of concepts and proficiency in laboratory techniques acquired in upper-level FS courses. 	<ul style="list-style-type: none"> Final grade on exams and laboratory assignments in FS 430 (Food Microbiology), and FS 410 (Food Chemistry and Analysis). Final grade on exams and assignments in FS 310 (Principles of Food Processing) and FS 420 (Food packaging and preservation) 	<ul style="list-style-type: none"> At least 80% of students receiving 80% or higher in each specified course. 	<ul style="list-style-type: none"> After completion of year 3 (FS 310) After completion of year 4 (FS 410, 420, and 430) 	<p>FSN Coordinator</p>
<p>Students will be able to demonstrate critical thinking skills and analytical abilities to identify and solve problems in the food and nutritional sciences.</p>	<ul style="list-style-type: none"> Students will demonstrate ability to apply critical thinking and analytical skills to analyze and resolve complex issues through case studies and problem-solving exercises. 	<ul style="list-style-type: none"> Evaluation of case studies or problem-solving exercises in FS 310 (Principles of Food Processing) and 420 (Food Packaging and preservation) 	<ul style="list-style-type: none"> At least 80% of students demonstrate proficiency in critical thinking skills based on instructor assessment. 	<ul style="list-style-type: none"> After completion of year 3 (FS 310) After completion of year 4 (FS 420) 	<p>FSN Coordinator</p>

<p>Students will be able to critique and effectively communicate food science and nutrition information.</p>	<ul style="list-style-type: none"> Students will demonstrate ability to effectively critique and communicate food science and nutrition information through both verbal and written means. 	<ul style="list-style-type: none"> Evaluation of class presentations graded with a rubric in FS 101 (Introduction to Food Science) and FS 220 (Intro to Food and Agriculture Law) Evaluation of research/review paper graded with a rubric in FS elective courses. 	<ul style="list-style-type: none"> At least 80% students with a score 3 or above on the rubrics for evaluating presentation. At least 80% students with a score 3 or above on the rubrics for evaluating research/review papers. 	<ul style="list-style-type: none"> After completion of year 1 (FS 101 and FS 220) After completion of year 4 (FS Electives) 	<p>FSN Coordinator</p>
<p>Apply conceptual, theoretical, and technical food science and nutrition concepts and knowledge to real-world circumstances and challenges, including designing and evaluating solutions</p>	<ul style="list-style-type: none"> Students will demonstrate the ability to apply food science and nutrition knowledge to real-world challenges, designing and evaluating solutions. 	<ul style="list-style-type: none"> Internship (FS 491) project report and formal presentation graded with a rubric, and feedback score from the internship site supervisor. 	<ul style="list-style-type: none"> At least 80% students with a score 3 or above on the rubric. 	<ul style="list-style-type: none"> After the completion of year 4. 	<p>FSN Coordinator</p>