

MAJOR IN FERMENTATION AND FOOD SCIENCE, FOOD SCIENCE CONCENTRATION

The Food Science concentration blends a strong science base with courses in food chemistry, food safety, food microbiology, and nutrition. The curriculum prepares students for employment in the food industry or in government in areas such as quality assurance, product development, research, food inspection, sensory evaluation, and consumer education. The concentration provides a strong background for pursuing a graduate program.

Learning Objectives

Upon successful completion, students will be able to:

1. Integrate and apply information from basic nutrition, food sciences, and biological and chemical concepts/processes to understand the production and quality of foods; and comprehend approaches used

to analyze the relationships among production of foods, nutrition, and food safety.

2. Demonstrate discipline-specific knowledge of the skills and competencies needed in food science and fermentation science and technology, including food microbiology, sensory evaluation, food chemistry, quality assessment, food production management, and the role of food in the promotion of health.
3. Analyze the production, service, and consumption of foods and beverages, including financial aspects, functional skills, and efficient management of resources with emphasis on safe service training and management.
4. Assess and apply the science, history, culture, safety, health, and nutrition dimensions of foods and beverages to the food industry.

Learn more about the Food Science concentration on the Department of Food Science and Human Nutrition website (<https://www.chhs.colostate.edu/fshn/programs-and-degrees/b-s-in-fermentation-science-and-technology/>).

Requirements Effective Fall 2024

Freshman

		AUCC	Credits
CO 150	College Composition (GT-CO2)	1A	3
FSHN 150	Survey of Human Nutrition		3
FTEC 110	Food-From Farm to Table		3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1
SOC 100	Introduction to Sociology (GT-SS3)	3C	3
Chemistry - Select one group from the following:			5
Group A			
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	
Group B			
CHEM 111	General Chemistry I (GT-SC2)	3A	
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)			3
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)			3
Total Credits			31

Sophomore

BMS 300 or HES 300	Principles of Human Physiology Physiology for Clinical Health Professions		4
CHEM 113	General Chemistry II		3
CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
FSHN 300	Food Principles and Applications		3
FSHN 301	Food Principles and Applications Laboratory		2

FTEC 210	Science of Food Fermentation		3
FTEC 292	Introduction to Fermentation and Food Science		1
MATH 141 or 155	Calculus in Management Sciences (GT-MA1)	1B	3-4
	Calculus for Biological Scientists I (GT-MA1)		
PH 110 or 121	Physics of Everyday Phenomena (GT-SC2)	3A	3-5
	General Physics I (GT-SC1)		
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		3D	3

Total Credits **30-33**

Junior

BC 351	Principles of Biochemistry		4
CO 300 or JTC 300	Writing Arguments (GT-CO3)	2	3
	Strategic Writing and Communication (GT-CO3)		
FSHN 350	Human Nutrition		3
FTEC 400	Food Safety		3
FTEC 430	Sensory Evaluation of Food Products	4A	2
MIP 300	General Microbiology		3
MIP 302	General Microbiology Laboratory		2
STAT 201	General Statistics (GT-MA1)	1B	3
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	3
Electives			3

Total Credits **29**

Senior

ANEQ 360	Principles of Meat Science		3
FTEC 350	Fermentation Microbiology		3
FTEC 447	Food Chemistry	4B	3
FTEC 465	Food Production Operations		3
FTEC 492 ¹	Senior Seminar Fermentation and Food Science	4C	4
MIP 334	Food Microbiology		3
SPCM 200	Public Speaking		3
Guided Electives (see list below) ²			5-8

Total Credits **27-30**

Program Total Credits: **120**

Guided Electives

Code	Title	Credits			
ANEQ 450	Processed Meats	3	FTEC 495	Independent Study	1-18
ANEQ 460	Meat Safety	2	FTEC 570	Food Product Development	2
ANEQ 470	Meat Processing Systems	4	FTEC 574	Current Issues in Food Safety	2
ERHS 220	Environmental Health	3	FTEC 576	Cereal Science	2
ERHS 320	Environmental Health–Water Quality	3	MGT 305	Fundamentals of Management	3
FSHN 455	Food Systems–Impact on Health/Food Security	2	PH 121	General Physics I (GT-SC1)	5
FSHN 470	Integrative Nutrition and Metabolism	3	RRM 330	Alcohol Beverage Control and Management	2
FTEC 351	Fermentation Microbiology Laboratory	2	RRM 400	Food and Society	3
FTEC 360	Brewing Processes	4	SOCR 330	Principles of Genetics	3
FTEC 375	Introduction to Fermentation Unit Operations	4			
FTEC 487	Internship	1-15			
FTEC 578/HORT 578	Phytochemicals and Probiotics for Health	3			

¹ FTEC 492 should be taken in both semesters of Senior year.

² Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Freshman

Semester 1		Critical	Recommended	AUCC	Credits
FSHN 150	Survey of Human Nutrition	X			3
LIFE 102	Attributes of Living Systems (GT-SC1)	X		3A	4
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
SOC 100	Introduction to Sociology (GT-SS3)	X		3C	3
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)			X	1C	3

Total Credits**15**

Semester 2		Critical	Recommended	AUCC	Credits
CO 150	College Composition (GT-CO2)	X		1A	3
FTEC 110	Food-From Farm to Table	X			3
MATH 124	Logarithmic and Exponential Functions (GT-MA1)	X		1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
Chemistry - Select one group from the following:		X			5
Group A					
CHEM 107	Fundamentals of Chemistry (GT-SC2)			3A	
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	
Group B					
CHEM 111	General Chemistry I (GT-SC2)			3A	
CHEM 112	General Chemistry Lab I (GT-SC1)			3A	
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)			X	3B	3

Total Credits**16****Sophomore**

Semester 3		Critical	Recommended	AUCC	Credits
CHEM 113	General Chemistry II	X			3
FTEC 210	Science of Food Fermentation	X			3
MATH 141 or 155	Calculus in Management Sciences (GT-MA1) Calculus for Biological Scientists I (GT-MA1)	X		1B	3-4
PH 110 or 121	Physics of Everyday Phenomena (GT-SC2) General Physics I (GT-SC1)	X		3A	3-5
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)			X	3D	3

Total Credits**15-18**

Semester 4		Critical	Recommended	AUCC	Credits
BMS 300 or HES 300	Principles of Human Physiology Physiology for Clinical Health Professions	X			4
CHEM 245	Fundamentals of Organic Chemistry	X			4
CHEM 246	Fundamentals of Organic Chemistry Laboratory	X			1
FSHN 300	Food Principles and Applications	X			3
FSHN 301	Food Principles and Applications Laboratory	X			2
FTEC 292	Introduction to Fermentation and Food Science	X			1

Total Credits**15****Junior**

Semester 5		Critical	Recommended	AUCC	Credits
BC 351	Principles of Biochemistry	X			4
CO 300 or JTC 300	Writing Arguments (GT-CO3) Strategic Writing and Communication (GT-CO3)	X		2	3
FSHN 350	Human Nutrition	X			3
FTEC 400	Food Safety	X			3

STAT 201	General Statistics (GT-MA1)	X		1B	3
Total Credits					16
Semester 6		Critical	Recommended	AUCC	Credits
MIP 300	General Microbiology	X			3
MIP 302	General Microbiology Laboratory	X			2
FTEC 430	Sensory Evaluation of Food Products	X		4A	2
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)			X	3B	3
Elective			X		3
Total Credits					13
Senior					
Semester 7		Critical	Recommended	AUCC	Credits
ANEQ 360	Principles of Meat Science	X			3
FTEC 350	Fermentation Microbiology	X			3
FTEC 447	Food Chemistry	X		4B	3
FTEC 465	Food Production Operations	X			3
FTEC 492	Senior Seminar Fermentation and Food Science	X		4C	2
Total Credits					14
Semester 8		Critical	Recommended	AUCC	Credits
FTEC 492	Senior Seminar Fermentation and Food Science	X		4C	2
MIP 334	Food Microbiology	X			3
SPCM 200	Public Speaking	X			3
Guided Electives (see list on Program Requirements tab)		X			5-8
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
Total Credits					13-16
Program Total Credits:					120