

# BS in Food Science and Nutrition

## Degree Program Description

From creating low-fat ice cream flavors that don't taste low-fat, to developing packaging that protects food from E. coli and other pathogens, food scientists work to ensure the foods that fill your shopping cart are safe, nutritious and delicious. Food Science and Nutrition uses the latest in food manufacturing to turn agricultural commodities into products that consumers want to buy. A degree in food science and nutrition provides the skills needed to succeed in a variety of food science careers. The degree can be individualized by choosing between four degree tracks: Food Science, Food Business, Enology (Winemaking), Culinary Science. Some careers include Food technologist, product developers and quality assurance supervisors. Food technologists are employed by some of the world's largest and most respected private industry companies, including Del Monte Foods, General Mills, H.J. Heinz and Kellogg. They apply the principles of many scientific disciplines, such as biology, chemistry, engineering, physics, molecular biology, nutrition and microbiology to the challenges of food production. Product developers find employment with many of the same companies as food technologists. Their job, however, focuses more on other aspects of food manufacturing such as consumer acceptability, economics, production feasibility and marketing. Developers also explore new ways to enhance nutritional value and health benefits. Quality assurance supervisors work in private industry but also are employed by government agencies such as the U.S. Department of Agriculture and the Food and Drug Administration. They are responsible for reviewing safety and manufacturing protocol to ensure that the food you eat is safe and of the highest quality.

## Major Program Requirements

Students earning a Bachelor of Science in Food Science and Nutrition are required to complete all University general education (<http://catalog.missouri.edu/academicdegreerequirements/generaleducationrequirements>), University undergraduate requirements (<http://catalog.missouri.edu/academicdegreerequirements/universityrequirements>), degree, and major requirements, including foundational courses, which may fulfill some University general education requirements.

### Foundational Courses

CHEM 1320	College Chemistry I	4
BIO_SC 1500	Introduction to Biological Systems with Laboratory	5
AG_EC 1041 or AG_EC 1042	Applied Microeconomics Applied Macroeconomics	3
AG_EC or Business course at the 2000-level or higher		3
COMMUN 1200 or AG_ED_LD 2220	Public Speaking Verbal Communication in Agriculture, Food and Natural Resources	3
Logic course select from PHIL 2400, 2420, 2600, or 2700		3

### Core Degree Requirements 21-23

F_S 1030	Food Science and Nutrition	3
F_S 2172	Elements of Food Microbiology	3
F_S 2199	Seminar in Professional Development	1

F_S 4199	Food Industry Senior Seminar	1
F_S 4310	Food Chemistry and Analysis	4
F_S 4370	Food Microbiology	3
AG_S_M 1040	Physical Principles for Agricultural Applications	3
or PHYSCS 1210	College Physics I	
CHEM 1330	College Chemistry II	4
CHEM 2030	Survey of Organic Chemistry	3
CHEM 2130	Organic Laboratory I	2
STAT 1300	Elementary Statistics	3
or STAT 1400	Elementary Statistics for Life Sciences	
MATH 1400	Calculus for Social and Life Sciences I	3-5
or MATH 1500	Analytic Geometry and Calculus I	
BIOCHM 3630	General Biochemistry	3
Total Credits		78-82

## Food Science Track

(Note: Tracks are not listed on transcripts or diplomas.)

### Food Science Track Core Courses (39 credits required)

NEP 2340	Human Nutrition I	3
F_S 4330	Principles of Food Processing	3
F_S 4311	Investigation of Food Properties	3
F_S 4315	Food Chemistry and Analysis Laboratory	3
F_S 4375	Food Microbiology Laboratory	2
F_S 4380	Sensory Analysis of Food and Beverages	3

### Capstone course

Choose either F_S 4970 or F_S 4980		3
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### Study Abroad or Internship

Choose either F_S 3190 or F_S 4941		3
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### Commodity Block

Choose two selections from the Commodity Block		12-14
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### Professional Electives

Choose any course(s) from the Professional Electives		2-4
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## Food Business Track

(Note: Tracks are not listed on transcripts or diplomas.)

### Food Business Track Core Courses (39 credits required)

#### Business Courses

AG_EC 1042	Applied Macroeconomics	3
or ECONOM 1015	Principles of Macroeconomics	
ACCTCY 2036 & ACCTCY 2037	Accounting I and Accounting II	6
AG_EC 3224	New Products Marketing	3
Ag law (choose one: AG_EC 2156, AG_EC 3256 or AG_EC 3257)		3
AG_EC 3260	General Farm Management	3
Ag Econ elective (choose one: AG_EC 2183, AG_EC 2223, AG_EC 3230, AG_EC 3150, AG_EC 3271, AG_EC 3272, AG_EC 3286, or AG_EC 3294)		3

### Capstone Course

Choose either F_S 4970 or F_S 4980		3
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### Study Abroad or Internship

Choose either F_S 3190 or F_S 4941		3
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### Commodity Course

Choose either F_S 4331, F_S 4344, or F_S 4440		3-4
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### Professional Electives

Choose courses from the list of Professional Electives 8-9

## Enology Track

(Note: Tracks are not listed on transcripts or diplomas.)

### Enology Track Core Courses (39 credits required)

F_S 1010	Introduction to Viticulture and Enology	1
F_S 2195	Grapes and Wines of the World	3
F_S 3240	Principles of Viticulture I	4
F_S 4315	Food Chemistry and Analysis Laboratory	3
F_S 4340	Principles of Viticulture II	4
F_S 4375	Food Microbiology Laboratory	2
F_S 4380	Sensory Analysis of Food and Beverages	3
F_S 4440	Principles of Winemaking and Wine Chemical Analysis	4
F_S 4441	Cellar Operations and Special Vinifications	3

### Capstone course

Choose F\_S 4970 or F\_S 4980 3

### Study Abroad or Internship

Choose F\_S 3190 or F\_S 4941 3

### Professional Electives

Choose courses from the Professional Electives 6

## Culinary Science Track

(Note: Tracks are not listed on transcripts or diplomas.)

### Culinary Science Track Core Courses (39 credits required)

#### Core Hospitality Mgmt courses

HSP_MGMT 1100	Introduction to Hospitality Management	3
HSP_MGMT 2100	Hospitality Law	3
HSP_MGMT 2300	Fundamentals of the Food and Beverage Industry	3
HSP_MGMT 3310	Food Service Budgeting and Controls	3

#### Core Food Science courses

NEP 2340	Human Nutrition I	3
F_S 4330	Principles of Food Processing	3
F_S 4380	Sensory Analysis of Food and Beverages	3

### Capstone course

Choose either F\_S 4970 or F\_S 4980 and HSP\_MGMT 4380 3

### Study Abroad or Internship

Choose either F\_S 3190 or F\_S 4941 3

### Commodity Course

Choose one of F\_S 3214, F\_S 3231 or F\_S 4440 3

### Professional Elective

Choose course from the Professional Electives 1

### Professional Elective 2

Choose course from the Professional Electives 3

### Professional Elective 3

Choose course from the Professional Electives 3

## Commodity Blocks

Select two pairs of courses to fulfill science track requirements

F_S 3214	Principles of Meat Science	3
F_S 4344	Processing Muscle Foods	3
or F_S 3231	Principles of Dairy Foods Science	
F_S 3231	Principles of Dairy Foods Science	3

F_S 4331	Technology of Dairy Products and Ingredients	3
or F_S 3240	Principles of Viticulture I	
F_S 3240	Principles of Viticulture I	4
F_S 4440	Principles of Winemaking and Wine Chemical Analysis	4

## Professional Electives

Select courses from this list to fulfill specific track requirements

F_S 1010	Introduction to Viticulture and Enology	1
F_S 2114	Live Animal and Meat Evaluation	3
F_S 2131	Dairy Products Evaluation	2
F_S 2195	Grapes and Wines of the World	3
F_S 3210	Kitchen Chemistry	3
F_S 3385	Problems in Food Science	1-99
F_S 4301	Topics in Food Science	1-99
F_S 4340	Principles of Viticulture II	4
F_S 4354	Physiology and Biochemistry of Muscle as Food	3
F_S 4385	Problems in Food Science	1-99
F_S 4390	Optimization and Management of Food and Agricultural Systems	3
F_S 4441	Cellar Operations and Special Vinifications	3

## Electives

Select electives to fulfill 120 credits with the following as recommended courses

SOCIOL 1000	Introduction to Sociology	1-3
PSYCH 1000	General Psychology	3
RU_SOC 1000	Rural Sociology	3
AFNR 1115	Foundations for College Success	1
GEOG 1600	Climate Change: Science and Public Policy	3

## Semester Plan

Below is a sample plan of study for the Food Science Track, semester by semester. A student's actual plan may vary based on course choices where options are available.

First Year			
Fall	CR Spring		CR
AFNR 1115	1 CHEM 1330		4
F_S 1030	3 ENGLISH 1000		3
MATH 1100	3 MATH 1400 or 1500		3
CHEM 1320	4 BIO_SC 1500		5
HIST or POL SC	3		
	14		15
Second Year			
Fall	CR Spring		CR
Humanities Elective	3 AG_S_M 1040		3
Food Science Commodity Course	3 F_S 2172		3
Electives	3 BIOCHM 3630		3
CHEM 2030	3 COMMUN 1200		3
CHEM 2130	2 Food Science Commodity Course		3
	14		15

Third Year		
Fall	CR Spring	CR
AG_EC 1041	3 NEP 2340	3
STAT 1400	3 F_S 2199	1
F_S 4370	3 F_S 4315	3
F_S 4375	2 F_S 4980	3
Psychology, Sociology or Rural Sociology	3 Food Science Commodity Course	3
	Professional Elective	3
	14	16
Fourth Year		
Fall	CR Spring	CR
F_S 4199	1 F_S 3190	3
F_S 4310	4 F_S 4311	3
F_S 4330	3 F_S 4380	3
F_S 4970	3 Ag Econ course	3
Food Science Commodity Course	3 Elective	3
Philosophy course	3	
	17	15

Total Credits: 120