

# 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                                    |  | 21    |
|---|--|-------|
| CHEM 1320   | College Chemistry I  | 4     |
| BIO_SC 1500   | Introduction to Biological Systems with Laboratory                                 | 5     |
| ABM 1041<br>or ECONOM 1014                              | Applied Microeconomics<br>Principles of Microeconomics                             | 3     |
| AG_EC or Business course at the 2000-level or higher    |  | 3     |
| COMMUN 1200<br>or AG_ED_LD 2220                         | Public Speaking<br>Verbal Communication in Agriculture, Food and Natural Resources | 3     |
| Logic course select from PHIL 2400, 2420, 2600, or 2700 |  | 3     |
| Core Degree Requirements                                |  | 36-38 |
| 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  |   | 114-118 |

## 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 |
|------------------------------------|--|---|

### Study Abroad or Internship

|                                    |  |   |
|------------------------------------|--|---|
| Choose either F_S 3190 or F_S 4941 |  | 3 |
|------------------------------------|--|---|

### Commodity Block

|  |  |    |
|--|--|----|
| Choose two selections from the Commodity Block |  | 12 |
|--|--|----|

### Professional Electives

|  |  |   |
|--|--|---|
| Choose courses from the Professional Electives |  | 4 |
|--|--|---|

## Food Business Track

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

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

#### Business Courses

|  |                                   |   |
|--|-----------------------------------|---|
| ABM 1042   | Applied Macroeconomics            | 3 |
| or ECONOM 1015   | Principles of Macroeconomics      |   |
| ACCTCY 2036<br>& ACCTCY 2037   | Accounting I<br>and Accounting II | 6 |
| ABM 3224   | New Products Marketing            | 3 |
| Ag law (choose one: AG_EC 2156, AG_EC 3256 or AG_EC 3257)  |                                   | 3 |
| ABM 3260   | General Farm Management           | 3 |
| ABM 3282   | Agribusiness Finance              | 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 |
|------------------------------------|--|---|

### Study Abroad or Internship

|                                    |  |   |
|------------------------------------|--|---|
| Choose either F_S 3190 or F_S 4941 |  | 3 |
|------------------------------------|--|---|

### Commodity Course

|   |  |   |
|---|--|---|
| Choose either F_S 4331, F_S 4344, or F_S 4345 |  | 3 |
|---|--|---|

|  |   |
|--|---|
| <b>Professional Electives</b>                          |   |
| Choose courses from the list of 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

#### Study Abroad or Internship

Choose either F\_S 3190 or F\_S 4941

#### Commodity Course

Choose one of F\_S 3214, F\_S 3231 or F\_S 4345

#### Professional Electives

Choose courses from the Professional Electives

## Commodity Blocks

Select two pairs of courses to fulfill science track requirements

|          |  |   |
|----------|--|---|
| F_S 3214 | Principles of Meat Science (AND)             | 3 |
| F_S 4344 | Processing Muscle Foods                      | 3 |
| F_S 3231 | Principles of Dairy Foods Science (AND)      | 3 |
| F_S 4331 | Technology of Dairy Products and Ingredients | 3 |
| F_S 2195 | Grapes and Wines of the World (AND)          | 3 |
| F_S 4345 | Principles of Viticulture and Winemaking     | 3 |

## Professional Electives

Select courses from this list to fulfill specific track requirements

|          |   |      |
|----------|---|------|
| F_S 1020 | World Food and You  | 3    |
| F_S 2131 | Dairy Products Evaluation   | 2    |
| F_S 3190 | Study Abroad: International Meat, Dairy and Enology                                     | 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 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 4941 | Internship in Food Science <sup>or any FS course</sup> not yet fulfilling a requirement | 3    |

## Electives

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

|             |   |   |
|-------------|---|---|
| SOCIOL 1000 | Introduction to Sociology                 | 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 |
| AFNR 3215   | Community Food Systems                    | 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 |
| ABM 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