UK UNIVERSITY OF KENTUCKY
College of Agriculture

DISCOVER

Food Science

Bachelor of Science in Food Science
Effective: July 1, 2002

Food Science is the study of transforming biological materials into food products for human consumption. Specifically, it is the application of basic sciences and engineering to studying sensory quality, nutritional value, safety, and preservation of foods. As a science-based program, the food science major requires studying diverse scientific disciplines related to food, including chemistry, biochemistry, biotechnology, microbiology, toxicology, and engineering. As such, food science is an ideal major for students who seek challenging industrial positions such as those in product development, and processing and management as well as students who plan to pursue medical, pharmacy, veterinary, or other advanced professional degrees.

Career Opportunities

In this era of microwave ovens, fast food restaurants, and convenience foods, fewer foods are consumed in their natural state. Instead, most foods are processed, one way or another, to have an improved and extended sensory and nutritional quality and shelf life. The increasing consumer demands for greater varieties of nutritious and convenience foods of uniformly high quality create broad career opportunities for food science graduates in the food and related industries.

With a Bachelor of Science degree in Food Science, students can choose among a variety of well-paid and challenging jobs such as those in management, quality control, research, and development (R&D) of food products and ingredients; process supervision; marketing; merchandising; customer support; consulting; promotional and educational services; and government research or regulatory functions. These career opportunities are spread over a broad range of food industry segments, such as meat and poultry, dairy, seafood, cereals and bakery, confectionary, beverages, fruit and vegetable processing, food packaging , food additives, functional or health promoting foods, and culinary and restaurant services.

Food Science is also an excellent pre-professional major for students who plan to continue their education in the medical, pharmacy, dental, or veterinary professions. In addition to pursuing professional degrees, many food science graduates attend graduate school to obtain an M.S. or Ph.D. degree, which leads to faculty positions at universities or leadership positions in the food industry or government organizations.

Graduation Requirements

To earn a Bachelor of Science degree in Food Science, you must complete 128 semester hours with at least 48 hours from courses at the 300 level and above. A 2.0 grade point standing (on a 4.0 scale) is necessary, and remedial courses cannot be counted towards the total hours required for the degree. In addition to University Studies Program requirements, you must satisfy pre-major, major, and specialty support requirements.

The Food Science program meets the requirements for accreditation by the Institute of Food Technologists, the national organization of Food Science professionals. Students enrolled in Food Science may have a course curriculum with emphasis on science, technology, business, nutrition, or marketing.

University Studies Program Requirements (USP)

I. Math (3-4 hours)
Completed by one of the following
1. A score of ≥ 26 on mathematics section of ACT **or**
2. A bypass examination **or**
3. MA 109 *College Algebra* **or**
4. Any calculus course (also satisfies Inference-Logic requirement).

II. Foreign Language (0-8 hours)
Completed by one of the following
1. Two years of the same foreign language in high school
or
2. Two semesters of the same foreign language in college.

III. Inference-Logic (3-5)
MA 123 *Elementary Calculus & Its Applications* **or**
MA 113 *Calculus I*

IV. Written Communication (3-6 hours)
Completed by one of the following:
1. ENG 101/102 *Writing I and II* (6 hours) **or**
2. Students who score ≥29 on the English section of the ACT and who pass an English proficiency examination may satisfy the University Writing requirement by passing ENG 105 *Writing: An Accelerated Course* (3 hours).

V. Oral Communication
Students who begin their first academic year in the College of Agriculture will satisfy this requirement by completing GEN 100 and GEN 200 (required under College Requirements).

Students who transfer into the College of Agriculture after completing 30 hours take GEN 200 and 3 hours from approved list under the communications requirement in the UK Bulletin or schedule book.

VI. Natural Sciences (6 hours)
CHE 105 *General College Chemistry I*
CHE 107 *General College Chemistry II*
CHE 115 *General College Chemistry Laboratory*

VII. Social Sciences (6 hours)
AEC 101 *Economics of Food & Agriculture*
and
one additional course outside economics from the approved USP list.

VIII. Humanities (6 hours)
Six hours from USP-approved list.

IX. Cross-cultural Requirement (3 hours)
Three hours from the USP-approved list.

X. USP Required Electives (6 hours)
BIO 150 *Principles of Biology I*
BIO 152 *Principles of Biology II*

College Requirements: 6-9 hours

A. General Requirements: 6 hours
GEN 100 *Issues in Agriculture: The Development of Modern Agriculture**
GEN 200 *Issues in Agriculture: Contemporary Problems in Agriculture and Natural Resources*

** Students transferring into the College of Agriculture after completing their first academic year in another UK major or at another university are only required to take GEN 200.*

B. Business or Technical Writing: 3 hours
ENG 203 *Business Writing* **or**
ENG 204 *Technical Writing*

C. Complete a proposed plan of study. During the sophomore year each student is required to develop a Plan of Study that details the courses to be taken during the junior and senior year.

Pre-major requirements: (41 hours)

AEC 101 *Economics of Food & Agriculture** 3
BIO 150 *Principles of Biology I** 3
BIO 152 *Principles of Biology II** 3
CHE 105 *General College Chemistry I** 3
CHE 107 *General College Chemistry II** 3
CHE 115 *General College Chemistry Laboratory* 3
MA 123 *Elementary Calculus & Its Applications** ..... 3 **and**
MA 132 *Calculus for Life Sciences** ..... 3 **or**
MA 113 *Calculus I** 4
BIO 208 *Principles of Microbiology* ..... 3 **or**
BIO 308 *General Microbiology* 3
BIO 209 *Introductory Microbiology Laboratory* 3
CHE 236 *Survey of Organic Chemistry* 3
NFS 212 *Introductory Nutrition* 3
PHY 211 *General Physics** 5
STA 291 *Statistical Method* 3

**May be used to satisfy University Studies Program requirements.*

Major Requirements (31 hours)

FSC 107 *Introduction to Food Science* 3
AEN 340 *Principles of Food Engineering* 4
NFS 311 *Nutritional Biochemistry* ..... 3 **or**
BCH 401G *Fundamentals of Biochemistry* 3
FSC 306 *Introduction to Food Processing* 4
FSC 434G *Food Chemistry* 4
FSC 530 *Food Microbiology* 5
FSC 535 *Food Analysis* 4
FSC 536 *Advanced Food Technology* 4

Specialty Support Requirements: (22 hours)

Students must complete 22 hours from the following list of courses. Alternative courses may be used with the approval of your advisor.

AEC 201 *Introduction to Farm and Natural Resource Finance* 3
AEC 305 *Principles of Agricultural Marketing* 3
ASC 300 *Meat Science* 4
ASC 303 *Evaluation and Grading of Meats* 2
CHE 230 *Organic Chemistry I*, *** 3
CHE 231 *Organic Chemistry I Laboratory*** 2
CHE 232 *Organic Chemistry II*** 3
CHE 233 *Organic Chemistry II Laboratory*** 2
ECO 201 *Principles of Economics I* 3
ECO 202 *Principles of Economics II* 3
FSC 304 *Animal Derived Foods* 5
FSC 395 *Special Problems in Food Science* 2
FSC 399 *Experiential Learning in Food Science* 1-6
FSC 430G *Sensory Evaluation of Foods* 3
FSC 538 *Food Fermentation and Thermal Processing* 3
FSC 540 *Food Plant Sanitation* 3
NFS 304 *Experimental Foods* 3
NFS 510 *Advanced Nutrition* 3
PHY 213 *General Physics*** 5

**May be substituted for CHE 236.*

***Required for pre-med, pre-vet, or pre-pharmacy major.*

Electives

Electives should be selected to complete the 128 semester hours required for graduation.

Suggested Schedule

If you enroll at UK during your first semester as a freshman, you may use the following suggested schedule. Use this schedule as a guide. For example, if you have previously attended another college, earned AP credit or credit by examination, or are not starting in the fall semester, your schedule will probably vary from the suggested schedule. Your faculty advisor will assist you in course selection and career planning.

This schedule assumes the foreign language component of the University Studies Program (USP) was completed in high school.

First Year

Fall Semester (15 hours)
ENG 101- Writing I 3
MA 123- Elementary Calculus & Its Application 3
CHE 105- General College Chemistry I 3
FSC 107- Introduction to Food Science 3
USP Humanities Requirement 3

Spring Semester (15 hours)
ENG 102- Writing II 3
CHE 107- General College Chemistry II 3
CHE 115- General Chemistry Laboratory 3
GEN 100- Issues in Agriculture I 3
BIO 150- Principles of Biology I 3

Second Year

Fall Semester (17 hours)
BIO 152- Principles of Biology II 3
CHE 236- Organic Chemistry 3
PHY 211- General Elementary Physics 5
STA 291- Statistical Methods 3
USP Social Sciences Requirement 3

Spring Semester (17 hours)
AEC 101- The Economics of Food and Agriculture 3
BIO 208- Principles of Microbiology 3
BIO 209- Introductory Microbiology Laboratory 2
MA 132- Calculus for the Life Sciences 3
GEN 200- Issues in Agriculture II 3
USP Humanities Requirement 3

Third Year

Fall Semester (17 hours)
FSC 306 Food Processing 4
AEN 340 Principles of Food Engineering (even year) 4
NFS 311 Nutritional Biochemistry ..... 3 **or**
BCH 401G Fundamentals of Biochemistry 3
USP Cross-cultural Requirement 3

Spring Semester (16 hours)
NFS 212 Introductory Nutrition 3
FSC 434G Food Chemistry 4
ENG 203 Business Writing ..... 3 **or**
ENG 204 Technical Writing 3
Specialty Support 3
Elective 3

Fourth Year

*Fall Semester*** (16 hours)*
FSC 530 Food Microbiology 5
FSC 535 Foods Analysis 4
Specialty Support 7

****If an internship was completed under FSC 399 (typically 3 credit hours) during the previous summer (a learning contract is required), the credits may be added to the fall semester schedule.*

Spring Semester (16 hours)
FSC 536 Advanced Food Technology 4
Specialty Support 9
Elective 3

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