FOOD SCIENCE (HSCI)

Food science is a degree program focused on food issues from the time crops leave the field until consumers buy the food products. Food scientists apply basic science (chemistry, biology, physics) to improve processing, preservation, and safety of food and to develop new food products. The food science major is approved by the Institute of Food Technologists.

Student Learning Outcomes

Upon graduation, students should be able to:

- Communicate effectively in their field of study using written, oral, visual and/or electronic forms.
- Demonstrate proficiency in ethical data collection and interpretation, literature review and citation, critical thinking and problem solving.
- Participate effectively in a group or team.
- Integrate creativity, innovation, or entrepreneurship in ways that produce value.
- Describe sociocultural competence relative to diversity, equity and/or inclusion.
- Explain how human activities impact the natural environment and how societies are affected.
- Meet program specific learning outcomes for the Food Science major.

The department also offers a food science minor (http://catalog.iastate.edu/collegeofhumansciences/foodscienceandhumannutrition/#undergraduateminortext).

Administered by the Department of Food Science and Human Nutrition

Courses listed below are required.

Total Degree Requirement: 120 cr.
Students must fulfill International Perspectives and U.S. Diversity requirements by selecting coursework from approved lists. These courses may also be used to fulfill other area requirements. Only 65 cr. from a two-year institution may apply to the degree which may include up to 16 technical cr.; 9 P-NP cr. of electives; 2.00 minimum GPA.

International Perspectives: 3 cr.
U.S. Diversity: 3 cr.
Communications and Library: 10 cr.

ENGL 1500	Critical Thinking and Communication	3
ENGL 2500	Written, Oral, Visual, and Electronic Composition	3
LIB 1600	Introduction to College Level Research	1
SPCM 2120	Fundamentals of Public Speaking	3
Total Credits		**10**

Humanities and Social Sciences: 6-12 cr.

Select Humanities course from approved list		3
ECON 1010	Principles of Microeconomics	3
If HSCI student, select:		6
Additional Humanities course		
Additional Humanities or Social Science course		

Ethics: 3 cr.

FSHN 3420	World Food Issues: Past and Present	3

Mathematical Sciences: 7-8 cr.

Select 4 credits from:		
MATH 1600	Survey of Calculus	4
or MATH 1650	Calculus I	
Select at least 3 credits from:		
STAT 1010	Principles of Statistics	3-4
or STAT 1040	Introduction to Statistics	
Total Credits		**7-8**

Physical Sciences: 17-19 cr.

CHEM 1770	General Chemistry I	5
& 1770L	and Laboratory in General Chemistry I	
CHEM 1780	General Chemistry II	3
CHEM 2310	Elementary Organic Chemistry	4-6
& 2310L	and Laboratory in Elementary Organic Chemistry	
or CHEM 3310	Organic Chemistry I	
& CHEM 3320	and Organic Chemistry II	
PHYS 1150	Physics for the Life Sciences	5
& 1150L	and Laboratory in Physics for the Life Sciences	
or PHYS 1310	General Physics I	
& 1310L	and General Physics I Laboratory	
Total Credits		**17-19**

Biological Sciences: 10-11 cr.

BBMB 3010	Survey of Biochemistry	3
or BBMB 3030	General Biochemistry	
or BBMB 3160	Principles of Biochemistry	
BIOL 2120	Principles of Biology II	3
BIOL 2120L	Principles of Biology Laboratory II	1
MICRO 2010	Introduction to Microbiology	2-3
or MICRO 3020	Biology of Microorganisms	
MICRO 2010L	Introductory Microbiology Laboratory	1
or MICRO 3020L	Microbiology Laboratory	
Total Credits		**10-11**

Food Science and Human Nutrition: 49 cr.

FSHN 1010	Food and the Consumer	3
FSHN 1100	Professional and Educational Preparation	1
FSHN 1670	Introductory Human Nutrition and Health	3
FSHN 2030	Contemporary Issues in Food Science and Human Nutrition	1
FSHN 2070	Processing of Foods: Basic Principles and Applications	3
FSHN 3050	Food Quality Management and Control	2
FSHN 3110	Food Chemistry	3
FSHN 3110L	Food Chemistry Laboratory	1
FSHN 3140	Professional Development for Culinary Food Science and Food Science Majors	1
FSHN 3150	Professional Skills for Culinary Food Science and Food Science Majors	1
FSHN 3510	Introduction to Food Engineering Concepts	3
FSHN 4030	Food Laws and Regulations	2
FSHN 4060	Sensory Evaluation of Food	3
FSHN 4070	Microbiological Safety of Foods of Animal Origins	3
FSHN 4100	Food Analysis	3
FSHN 4110	Food Ingredient Interactions and Formulations	2
FSHN 4120	Food Product Development	3
FSHN 4200	Food Microbiology	3
FSHN 4210	Food Microbiology Laboratory	3
FSHN 4710	Food Processing	3
FSHN 4720	Food Processing Laboratory	2
Total Credits		**49**

Select 5-6 credits from the following Professional Electives: 5-6

ABE 3250	Biorenewable Systems
ACCT 2150	Legal Environment of Business
ACCT 2840	Financial Accounting
ACCT 2850	Managerial Accounting
AESHM 4740	Entrepreneurship in Human Sciences
AGRON 4500	Issues in Sustainable Agriculture
ANS 2700	Foods of Animal Origin
ANS 2700L	Foods of Animal Origin Laboratory
ANS 3600	Fresh Meat Science and Applied Muscle Biology
ANS 4600	Science and Technology of Value Added Meat Products
CHEM 2110	Quantitative and Environmental Analysis
CHEM 2110L	Quantitative and Environmental Analysis Laboratory
CHEM 3160	Instrumental Methods of Chemical Analysis
CHEM 3160L	Instrumental Analysis Laboratory
ECON 2350	Introduction to Agricultural Markets
ECON 3010	Intermediate Microeconomics
ECON 3200	Labor Economics
ECON 3350	The Economics of Global Agricultural Food and Bio-energy
ECON 3370	Agricultural Marketing
ECON 3620	Applied Ethics in Agricultural Business
ECON 4600	Agricultural, Food, and Trade Policy
ENTSP 3100	Entrepreneurship and Innovation
FSHN 2410	Introduction to Manufacturing Processes for Plastics
FSHN 2420	The US Food System
FSHN 2640	Fundamentals of Nutritional Biochemistry
FSHN 2650	Nutrition for Active and Healthy Lifestyles
FSHN 2760	Understanding Grape and Wine Science
FSHN 4080	Dairy Products Evaluation
FSHN 4350	Analysis of Food Markets
FSHN 4420	Issues in Food and Society
FSHN 4600	Global Nutrition, Health and Sustainability
FSHN 4900B	Independent Study: Food Science
FSHN 4910B	Supervised Work Experience: Food Science
FSHN 4960A	Food Science and Human Nutrition Travel Course: International travel
or FSHN 4960B	Food Science and Human Nutrition Travel Course: Domestic travel
FSHN 4990	Undergraduate Research
FSHN 5090	Sensory Evaluation of Wines
GLOBE 2010	Introduction to Global Resource Systems
GLOBE 2200	Globalization and Sustainability
GLOBE 3030	Agricultural, Food and Natural Global Resource Systems
HORT 2210	Principles of Horticulture Science
HORT 4610	Fruit Crop Production and Management
HORT 4710	Vegetable Production and Management
HORT 4710L	Vegetable Production and Management Lab
MGMT 3710	Organizational Behavior
MGMT 4140	International Management
MGMT 4720	Diversity, Equity, and Inclusion in Organizations
MIS 3010	Management Information Systems
MKT 3400	Principles of Marketing
MKT 4470	Consumer Behavior

MKT 4480	Global Marketing	
Total Credits		**5-6**

Electives: 2-13 cr. Select from any university coursework to earn at least 120 total credits. Food science internship experience is strongly recommended during the summers, and students can earn elective credits for the internship experience by enrolling in FSHN 4910B.
Go to FSHN courses. (http://catalog.iastate.edu/azcourses/fs_hn/)

Food Science, B.S.

First Year

Fall	Credits	Spring	Credits
FSHN 1010	3	FSHN 1670	3
FSHN 1100	1	CHEM 1780	3
CHEM 1770	4	BIOL 2120	3
CHEM 1770L	1	BIOL 2120L	1
ENGL 1500	3	ECON 1010	3
LIB 1600	1	Humanities	3
Humanities or Elective	3		
	16		**16**

Second Year

Fall	Credits	Spring	Credits
CHEM 2310 and CHEM 2310L or CHEM 3310	3-4	BBMB 3010, 3030, or 3160	3
FSHN 2030	1	CHEM 3320 (if CHEM 3310 taken) or Elective	3
ENGL 2500	3	MICRO 2010 or 3020	2-3
PHYS 1150 or 1310	4	MICRO 2010L or 3020L	1
PHYS 1150L or 1310L	1	STAT 1010 or 1040	3-4
MATH 1600 or 1650	4	FSHN 2070	3
	16-17		**15-17**

Third Year

Fall	Credits	Spring	Credits
FSHN 3110	3	FSHN 3050	2
FSHN 3110L	1	FSHN 3510	3
FSHN 3140	1	FSHN 4030	2
FSHN 3150	1	FSHN 4110	2
FSHN 4200	3	FSHN 4210	3
SPCM 2120	3	Professional Elective	3
Professional Elective	3		
	15		**15**

Fourth Year

Fall	Credits	Spring	Credits
FSHN 4060	3	FSHN 3420	3
FSHN 4100	3	FSHN 4120	3
FSHN 4710	3	FSHN 4720	2
FSHN 4070	3	U.S. Diversity (if not already taken) or elective	3
Elective*	2	Humanities/social science (HSCI) or elective (AGLS)	3
	14		**14**

* Choose elective courses to total equal to or greater than 120 credits.

Note: This sequence is only an example. The number of credits taken each semester should be based on the individual student's situation. Factors that may affect credit hours per semester include student ability, employment, health, activities, and grade point considerations.

More information on the Food Science, Food Safety, and Food and Society minors can be found here: http://catalog.iastate.edu/collegeofhumansciences/foodscienceandhumannutrition/#undergraduateminortext. (http://catalog.iastate.edu/collegeofhumansciences/foodscienceandhumannutrition/#undergraduateminortext)

The Department of Food Science and Human Nutrition offers a Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) in Food Science and Technology. More information can be found here: https://www.grad-college.iastate.edu/academics/programs/apresults.php?id=50.