FOOD SCIENCE (AGLS)

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/previouscatalogs/2023-2024/collegeofagricultureandlifesciences/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 150	Critical Thinking and Communication	3
ENGL 250	Written, Oral, Visual, and Electronic Composition	3
LIB 160	Introduction to College Level Research	1
SP CM 212	Fundamentals of Public Speaking	3
Total Credits		**10**

Humanities and Social Sciences: 6-12 cr.

Select Humanities course from approved list		3
ECON 101	Principles of Microeconomics	3
If H Sci student, select:		6
Additional Humanities course		
Additional Humanities or Social Science course		

Ethics: 3 cr.

FS HN 342	World Food Issues: Past and Present	3

Mathematical Sciences: 7-8 cr.

Select 4 credits from:		
MATH 160	Survey of Calculus	4
or MATH 165	Calculus I	
Select at least 3 credits from:		
STAT 101	Principles of Statistics	3-4
or STAT 104	Introduction to Statistics	
Total Credits		**7-8**

Physical Sciences: 17-19 cr.

CHEM 177 & 177L	General Chemistry I and Laboratory in General Chemistry I	5
CHEM 178	General Chemistry II	3
CHEM 231 & 231L	Elementary Organic Chemistry and Laboratory in Elementary Organic Chemistry	4-6
or CHEM 331 & CHEM 332	Organic Chemistry I and Organic Chemistry II	
PHYS 115 & 115L	Physics for the Life Sciences and Laboratory in Physics for the Life Sciences	5
or PHYS 131 & 131L	General Physics I and General Physics I Laboratory	
Total Credits		**17-19**

Biological Sciences: 10-11 cr.

BBMB 301	Survey of Biochemistry	3
or BBMB 303	General Biochemistry	
or BBMB 316	Principles of Biochemistry	
BIOL 212	Principles of Biology II	3
BIOL 212L	Principles of Biology Laboratory II	1
MICRO 201	Introduction to Microbiology	2-3
or MICRO 302	Biology of Microorganisms	
MICRO 201L	Introductory Microbiology Laboratory	1
or MICRO 302L	Microbiology Laboratory	
Total Credits		**10-11**

Food Science and Human Nutrition: 49 cr.

FS HN 101	Food and the Consumer	3
FS HN 110	Professional and Educational Preparation	1
FS HN 167	Introductory Human Nutrition and Health	3
FS HN 203	Contemporary Issues in Food Science and Human Nutrition	1
FS HN 207	Processing of Foods: Basic Principles and Applications	3
FS HN 305	Food Quality Management and Control	2
FS HN 311	Food Chemistry	3
FS HN 311L	Food Chemistry Laboratory	1
FS HN 314	Professional Development for Culinary Food Science and Food Science Majors	1
FS HN 315	Professional Skills for Culinary Food Science and Food Science Majors	1
FS HN 351	Introduction to Food Engineering Concepts	3
FS HN 403	Food Laws and Regulations	2
FS HN 406	Sensory Evaluation of Food	3
FS HN 407	Microbiological Safety of Foods of Animal Origins	3
FS HN 410	Food Analysis	3
FS HN 411	Food Ingredient Interactions and Formulations	2
FS HN 412	Food Product Development	3
FS HN 420	Food Microbiology	3
FS HN 421	Food Microbiology Laboratory	3
FS HN 471	Food Processing	3
FS HN 472	Food Processing Laboratory	2
Total Credits		**49**

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

A B E 325	Biorenewable Systems
ACCT 215	Legal Environment of Business
ACCT 284	Financial Accounting
ACCT 285	Managerial Accounting
AESHM 474	Entrepreneurship in Human Sciences
AGRON 450	Issues in Sustainable Agriculture
AN S 270	Foods of Animal Origin
AN S 270L	Foods of Animal Origin Laboratory
AN S 360	Fresh Meat Science and Applied Muscle Biology
AN S 460	Science and Technology of Value Added Meat Products
CHEM 211	Quantitative and Environmental Analysis
CHEM 211L	Quantitative and Environmental Analysis Laboratory
CHEM 316	Instrumental Methods of Chemical Analysis
CHEM 316L	Instrumental Analysis Laboratory
ECON 235	Introduction to Agricultural Markets
ECON 301	Intermediate Microeconomics
ECON 320	Labor Economics
ECON 335	The Economics of Global Agricultural Food and Bio-energy
ECON 337	Agricultural Marketing
ECON 362	Applied Ethics in Agricultural Business
ECON 460	Agricultural, Food, and Trade Policy
ENTSP 310	Entrepreneurship and Innovation
FS HN 241	Introduction to Manufacturing Processes for Plastics
FS HN 242	The US Food System
FS HN 264	Fundamentals of Nutritional Biochemistry
FS HN 265	Nutrition for Active and Healthy Lifestyles
FS HN 276	Understanding Grape and Wine Science
FS HN 408	Dairy Products Evaluation
FS HN 435	Analysis of Food Markets
FS HN 442	Issues in Food and Society
FS HN 460	Global Nutrition and Health
FS HN 490B	Independent Study: Food Science
FS HN 491B	Supervised Work Experience: Food Science
FS HN 496	Food Science and Human Nutrition Travel Course
FS HN 499	Undergraduate Research
FS HN 509	Sensory Evaluation of Wines
GLOBE 201	Introduction to Global Resource Systems
GLOBE 220	Globalization and Sustainability
GLOBE 303	Agricultural, Food and Natural Global Resource Systems
HORT 221	Principles of Horticulture Science
HORT 461	Fruit Crop Production and Management
HORT 471	Vegetable Production and Management
HORT 471L	Vegetable Production and Management Lab
MGMT 371	Organizational Behavior
MGMT 414	International Management
MGMT 472	Diversity, Equity, and Inclusion in Organizations
MIS 301	Management Information Systems
MKT 340	Principles of Marketing
MKT 447	Consumer Behavior
MKT 448	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 FS HN 491B.
Go to FS HN courses. (http://catalog.iastate.edu/previouscatalogs/2023-2024/azcourses/fs_hn/)

Food Science, B.S.

First Year

Fall	Credits	Spring	Credits
FS HN 101	3	FS HN 167	3
FS HN 110	1	CHEM 178	3
CHEM 177	4	BIOL 212	3
CHEM 177L	1	BIOL 212L	1
ENGL 150	3	ECON 101	3
LIB 160	1	Humanities	3
Humanities or Elective	3		
	16		**16**

Second Year

Fall	Credits	Spring	Credits
CHEM 231 and CHEM 231L or CHEM 331	3-4	BBMB 301, 303, or 316	3
FS HN 203	1	CHEM 332 (if CHEM 331 taken) or Elective	3
ENGL 250	3	MICRO 201 or 302	2-3
PHYS 115 or 131	4	MICRO 201L or 302L	1
PHYS 115L or 131L	1	STAT 101 or 104	3-4
MATH 160 or 165	4	FS HN 207	3
	16-17		**15-17**

Third Year

Fall	Credits	Spring	Credits
FS HN 311	3	FS HN 305	2
FS HN 311L	1	FS HN 351	3
FS HN 314	1	FS HN 403	2
FS HN 315	1	FS HN 411	2
FS HN 420	3	FS HN 421	3
SP CM 212	3	Professional Elective	3
Professional Elective	3		
	15		**15**

Fourth Year

Fall	Credits	Spring	Credits
FS HN 406	3	FS HN 342	3
FS HN 410	3	FS HN 412	3
FS HN 471	3	FS HN 472	2
FS HN 407	3	U.S. Diversity (if not already taken) or elective	3
Elective*	2	Humanities/social science (H Sci) 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/collegeofagricultureandlifesciences/foodscienceandhumannutrition/#undergraduateminortext (http://catalog.iastate.edu/previouscatalogs/2023-2024/collegeofagricultureandlifesciences/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.