

FOOD SCIENCE AND HUMAN NUTRITION

The Department of Food Science and Human Nutrition is jointly administered by the College of Agriculture and Life Sciences and the College of Human Sciences. All curricula offered by the department are available to students in either college. These majors include:

- Culinary food science
- Dietetics
- Diet and exercise
- Food science
- Nutritional science
- Nursing

Visit the department web site at: www.fshn.hs.iastate.edu (<http://www.fshn.hs.iastate.edu>).

Undergraduate Study

Culinary Food Science

Culinary food science is an interdisciplinary degree combining a strong food science foundation with acquisition of culinary skills. The program includes chemistry, organic chemistry, biology, microbiology, and biochemistry as well as quantity food production, fine dining management, and food safety and sanitation. Internship experience in the food industry or culinary business is required. Culinary food science graduates are qualified to work as managers and specialists in food research, product development, culinary applications, and food marketing and sales. For more information: <https://fshn.hs.iastate.edu/find-your-major/culinary-food-science/>

Dietetics

The Didactic Program in Dietetics (DPD) is accredited by the Accreditation Council for Education in Nutrition and Dietetics, the accrediting agency of the Academy of Nutrition and Dietetics. The dietetics undergraduate curriculum meets the academic requirements as the DPD. Additionally, the curriculum for concurrent bachelor's and master's degrees in diet and exercise meets the academic requirements of the DPD. Graduates of the program are eligible to apply for admission to accredited dietetics internships/supervised practice programs. Upon successful completion of the experience program and a master's degree, graduates are eligible to take the national examination administered by the Commission on Dietetic Registration to become a Registered Dietitian Nutritionist (RDN) and to practice in the field of dietetics. There is a \$30 fee for a statement of verification of completion of the DPD. For information about verification statements policies, see the dietetics program website: <https://fshn.hs.iastate.edu/find-your-major/dietetics/>.

The dietetics program includes study in basic sciences, nutrition, and food science with applications to medical dietetics, nutrition counseling and education, and community nutrition. Foodservice management is also an important aspect of the program. Graduates work in clinical settings, consulting, food companies, food services, sports or athletic programs, corporate wellness programs, care facilities for patients from neonatal to geriatric, and community or school health programs.

Diet and Exercise

A program for concurrent Bachelor of Science and Master of Science (B.S./M.S.) degrees in diet and exercise (<https://fshn.hs.iastate.edu/find-your-major/diet-and-exercise/>) is available. The program is jointly administered by the Department of Food Science and Human Nutrition (FSHN), within the College of Agriculture and Life Sciences and College of Human Sciences, and the Department of Kinesiology within the College of Human Sciences. Students interested in this program enroll as pre-diet and exercise students. In the fall of the third year, students apply for admission to the BS/MS program. Students not accepted into the program can continue toward completion of the BS degree in dietetics or kinesiology and health. Coursework has been designed to facilitate a 4-year graduation date for those students not accepted into the program and electing to complete a single undergraduate degree. Students accepted into the program will progress toward completion of B.S./M.S. degrees in diet and exercise.

Food Science

Food science is a discipline in which the principles of biological and physical sciences are used to study the nature of foods, the causes of their deterioration, and the principles underlying the processing and preparation of food. It is the application of science and technology to the provision of a safe, wholesome, and nutritious food supply. Biotechnology and toxicology interrelate with food science in the area of food safety. In the food industry, food scientists work in research and development of products or processes, production supervision, quality control, marketing and sales, test kitchens and recipe development, product promotion and communication. Food scientists also work in government regulatory agencies and academic institutions.

The food science major is approved by the Institute of Food Technologists, the national professional organization of food science. Career options include quality control/assurance; production supervision; management and sales; research careers in the food industry, government, or academia; business; journalism; food product formulation and recipe development; food promotion and communication; and consumer services in government and industry. For more information: <https://fshn.hs.iastate.edu/find-your-major/food-science/>

Students in food science have the opportunity to pursue a Master of Business Administration (<http://www.fshn.hs.iastate.edu/undergraduate-programs/food-science/>) (MBA) concurrently with the Bachelor of

Science (B.S.) degree in food science. The program is designed so students can earn both the B.S. in food science and MBA in five years, to meet the needs of students who are interested in management careers in the food industry. Students apply for admission to the MBA program in the spring of the third year. The program for concurrent B.S. in food science/MBA degrees is a rigorous 5-year program, and admission is very selective.

Nutritional Science

Nutritional science looks at the connection between diet and health. Students learn how diet can play a crucial role in the cause, treatment, and prevention of many diseases. There are degree program focuses within nutritional science. The pre-health and research coursework prepares students for work in research laboratories, graduate study in nutrition or biological sciences, or entrance into health professional programs, such as medical, dental, physician assistant, and pharmacy schools. Students gain a strong science education along with human nutrition expertise. The health coach and nutrition and wellness coursework prepare students for work positions in program planning and evaluation for community, public health, non-profit, and corporate wellness programs addressing the growing public interest in nutrition, wellness, and preventative health. Students learn about the role of nutrition and healthy eating for disease prevention and wellness. For more information: <https://fshn.hs.iastate.edu/find-your-major/nutritional-science/>

Nursing

The Bachelor of Science in Nursing (BSN) program at Iowa State University is a RN-to-BSN program, designed for those who are already a Registered Nurse (RN), and desire to further their nursing career and education to the next level. Iowa State's RN-to-BSN program provides interactive learning opportunities where students can apply their real-world experiences and education to inspire innovation in their places of care. RN-to-BSN students will be challenged to enhance health promotion and disease prevention, apply nursing science and evidenced-based patient-centered care, focus on the culture of health for nurses, individuals, and communities, and demonstrate the continuum of care, from a nurse's self-care to patient care to community and population health.

The baccalaureate nursing program at Iowa State University of Science and Technology located in Ames, Iowa is approved by the:

Iowa Board of Nursing (IBON)

Riverpoint Business Park
400 SW 8th St., Suite B
Des Moines, IA 50309
(515) 281-3255

The baccalaureate nursing program at Iowa State University of Science and Technology located in Ames, Iowa is accredited by the:

Accreditation Commission for Education in Nursing (ACEN)

3390 Peachtree Road NE, Suite 1400
Atlanta, GA 30326
(404) 975-5000

The most recent accreditation decision made by the ACEN Board of Commissioners for the baccalaureate nursing program is initial accreditation.

View the public information disclosed by the ACEN regarding this program at <http://www.acenursing.com/accreditedprograms/programSearch.htm>. (<http://www.acenursing.com/accreditedprograms/programSearch.htm>)

For more information and RN-to-BSN learning outcomes: <https://fshn.hs.iastate.edu/find-your-major/nursing/>

FSHN Departmental 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 more information: <https://fshn.hs.iastate.edu/staff-and-faculty/resources/outcomes-assessment/learning-outcomes/>.

Communication Proficiency is certified by a grade of C or better in 6 credits of coursework in composition (ENGL 1500 Critical Thinking and Communication and ENGL 2500 Written, Oral, Visual, and Electronic Composition or other communication-intensive courses) and a grade of C or better in 3 credits of coursework in oral communication.

Minors - Undergraduate

The department offers minors in:

- culinary food science
- food and society
- food safety (interdepartmental minor)

- food science
- nutrition

All minors require at least 15 credits, including at least 6 credits in courses numbered 3000 or above taken at Iowa State University. The minor must include at least 9 credits that are not used to meet any other department, college, or university requirement.

Prerequisites: Students must complete prerequisite requirements for courses included in the minor.

Minor in Culinary Food Science

FSHN 1010	Food and the Consumer	3
FSHN 1150	Food Preparation Laboratory	1-2
	or FSHN 2150 Advanced Food Preparation Laboratory	
FSHN 2140	Scientific Study of Food	3
Select additional credits from the following list for a minimum of 15 credits for the minor.		
FSHN 2200	American Food and Culture	3
FSHN 3050	Food Quality Management and Control	2
FSHN 3110 & 3110L	Food Chemistry and Food Chemistry Laboratory	4
FSHN 4030	Food Laws and Regulations	2
FSHN 4110	Food Ingredient Interactions and Formulations	2
FSHN 4910D	Supervised Work Experience: Culinary Science	1-4
ANS 2700 & 2700L	Foods of Animal Origin and Foods of Animal Origin Laboratory	3
ANS 4600	Science and Technology of Value Added Meat Products	3
HSPM 1330	Food Safety Certification	1
HSPM 3800 & 3800L	Food Production Management and Food Production Management Experience	6
HSPM 3830	Wine and Spirits in Hospitality Management	2
	or FSHN 5090 Sensory Evaluation of Wines	
HSPM 4870	Fine Dining Management	3

Minor in Food and Society (16-17 credits required)

FSHN 1010	Food and the Consumer	3
FSHN 1670	Introductory Human Nutrition and Health	3
FSHN 2420	The US Food System	3
FSHN 3420	World Food Issues: Past and Present	3
FSHN 4420	Issues in Food and Society	2
Select 2-3 additional credits from:		2-3
AGRON 4500	Issues in Sustainable Agriculture	
FSHN 2200	American Food and Culture	

FSHN 3640	Nutrition and Prevention of Chronic Disease	
FSHN 3650	Obesity and Health	
FSHN 4030	Food Laws and Regulations	
FSHN 4600	Global Nutrition, Health and Sustainability	
FSHN 4630	Community Nutrition and Health	
FSHN 4960A	Food Science and Human Nutrition Travel Course: International travel	
MATE 2200	Globalization and Sustainability	
SOC 3450	Population and Society	
SOC 3480	Global Poverty, Resources and Sustainable Development	
SOC 4440	Sociology of Food and Agricultural Systems	

Interdepartmental Minor in Food Safety

FSHN 1010	Food and the Consumer	3
	or HSPM 2330 Hospitality Sanitation and Safety	
FSHN 4030	Food Laws and Regulations	2
FSHN 4200	Food Microbiology	3
FSHN 4890	Issues in Food Safety	1

Select 3 credits from the Food Microbiology area

FSHN/MICRO 4070	Microbiological Safety of Foods of Animal Origins	
FSHN/MICRO 4210	Food Microbiology Laboratory	
MICRO 3100	Medical Microbiology	

Select 3 credits from the Food Processing area:

FSHN 2070	Processing of Foods: Basic Principles and Applications	
FSHN 3050	Food Quality Management and Control	
ANS 2700 & 2700L	Foods of Animal Origin and Foods of Animal Origin Laboratory	
ANS 3600	Fresh Meat Science and Applied Muscle Biology	
FSHN 4710	Food Processing	
FSHN 4720	Food Processing Laboratory	

Minor in Food Science:

FSHN 1010	Food and the Consumer	3
FSHN 2070	Processing of Foods: Basic Principles and Applications	3

Select 9 additional credits:

<u>Food chemistry:</u>		
FSHN 3110	Food Chemistry (lab optional: FSHN 3110L)	3
FSHN 4100	Food Analysis	3

FSHN 4110	Food Ingredient Interactions and Formulations	2
Food microbiology:		
FSHN 4070	Microbiological Safety of Foods of Animal Origins	3
FSHN 4190	Foodborne Hazards	3
FSHN 4200	Food Microbiology	3
FSHN 4210	Food Microbiology Laboratory	3
Food processing/engineering:		
FSHN 3510	Introduction to Food Engineering Concepts	3
FSHN 4710	Food Processing	3
FSHN 4720	Food Processing Laboratory	2
General food science:		
FSHN 3050	Food Quality Management and Control	2
FSHN 4030	Food Laws and Regulations	2
FSHN 4060	Sensory Evaluation of Food	3

Select additional credits from the following list to meet a minimum of 15 credits for the minor:

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

Minor in Nutrition: For students from outside the FSHN department

FSHN 1670	Introductory Human Nutrition and Health	3
FSHN 2650	Nutrition for Active and Healthy Lifestyles	3
FSHN 3600	Advanced Nutrition and the Regulation of Metabolism in Health and Disease	3

Select at least 6 credits from:

FSHN 3610	Nutrition and Health Assessment	2
FSHN 3620	Nutrition and Health Throughout the Lifecycle	3
FSHN 3640	Nutrition and Prevention of Chronic Disease	3
FSHN 3650	Obesity and Health	3
FSHN 4630	Community Nutrition and Health	3
FSHN 4670	Molecular Basis of Nutrition in Disease Etiology and Health Promotion	3
FSHN 4920	Research Concepts in Human Nutrition	2
NUTRS 5010	Biochemical and Physiological Basis of Nutrition: Macronutrients and Micronutrients	4

Minor in Nutrition: For students majoring in culinary food science or food science

FSHN 2650	Nutrition for Active and Healthy Lifestyles	3
FSHN 3600	Advanced Nutrition and the Regulation of Metabolism in Health and Disease	3

Select at least 9 credits from:

FSHN 3610	Nutrition and Health Assessment	2
FSHN 3620	Nutrition and Health Throughout the Lifecycle	3
FSHN 3640	Nutrition and Prevention of Chronic Disease	3
FSHN 3650	Obesity and Health	3
FSHN 4630	Community Nutrition and Health	3
FSHN 4670	Molecular Basis of Nutrition in Disease Etiology and Health Promotion	3
FSHN 4920	Research Concepts in Human Nutrition	2
NUTRS 5010	Biochemical and Physiological Basis of Nutrition: Macronutrients and Micronutrients	4

Graduate Study

The Food Science and Human Nutrition (FSHN) Department offers coursework for the degrees Master of Science and Doctor of Philosophy. Degree options include:

- food science and technology (<https://fshn.hs.iastate.edu/graduate-students/graduate-programs/food-science-and-technology/>) (M.S. and Ph.D.)
- meat science (<https://www.meatscience.ag.iastate.edu/>) (M.S. and Ph.D.; co-major in animal science)
- nutritional sciences (<https://fshn.hs.iastate.edu/graduate-students/graduate-programs/interdepartmental-graduate-program-in-nutritional-sciences/>) (M.S. and Ph.D.; interdepartmental graduate program)
- family and consumer sciences/dietetics (<https://online.hs.iastate.edu/graduate-degrees/dietetics/>) (M.S. only)
- diet and exercise (<https://fshn.hs.iastate.edu/graduate-students/graduate-programs/diet-and-exercise/>) (B.S./M.S.)
- nutritional sciences (B.S./M.S.)

Prerequisite to major work is a baccalaureate degree in food science, nutrition, other physical/biological sciences or engineering that is substantially equivalent to those at Iowa State University.

Students taking major work for the degree Doctor of Philosophy either in food science and technology or in nutritional sciences may choose minors from other fields including anthropology, biorenewable resources and technology, chemistry, biochemistry, economics, education, journalism, microbiology, psychology, physiology, statistics, toxicology, or other related fields.

The interdepartmental graduate program in nutritional sciences, administered through the Graduate College, under the auspices of the Chairs of FSHN and Animal Science, will provide the structure for coordinating and enhancing interdisciplinary nutrition research and graduate education. Graduate students will be able to select from three specializations: animal nutrition, human nutrition, or molecular/biochemical nutrition. The two main departments are FSHN and Animal

Science, whereas other departments (such as Kinesiology; Biochemistry, Biophysics, and Molecular Biology; Agronomy; and Statistics) may also be involved.

The department offers work for concurrent B.S. and M.S. degree programs that allow students to obtain both the B.S. and M.S. degrees in 5 years. The programs are available to students majoring in nutritional science or pre-diet and exercise, and students' progress toward M.S. degrees in nutritional sciences or diet and exercise, respectively. Students interested in these programs should contact the department for details. Application for admission to the Graduate College should be made during the junior year. Students begin research for the M.S. thesis or creative component during the summer after their junior year and are eligible for research assistantships.

Students graduating with advanced degrees in nutritional sciences and in food science and technology will demonstrate competency in their chosen discipline. Measurable outcomes will include the ability to: 1) design, conduct, and interpret research; 2) apply theoretical information to solve practical problems; 3) prepare and communicate discipline-specific information in written and oral forms to scientific and lay audiences; 4) facilitate learning in the classroom; 5) submit a paper for publication in a peer-reviewed journal; and 6) secure professional-level positions in academia, industry, government, or health care.

Minors - Graduate

The department offers coursework for graduate minors in:

- food science/technology (<https://fshn.hs.iastate.edu/graduate-students/graduate-programs/food-science-and-technology/>)
- nutritional sciences (<https://fshn.hs.iastate.edu/graduate-students/graduate-programs/interdepartmental-graduate-program-in-nutritional-sciences/>)

Food Science and Technology Graduate Minor students must complete the following:

- 9 to 12 credits. Students without a background in food chemistry, food engineering/processing, and/or food microbiology are required to take FSHN 5110 and two 6000-level courses in two different competency areas.
- 9 credits of graduate level food science coursework as approved by the POS committee.
- Maximum of 3 credits at the 4000 level.

Nutritional Sciences Graduate Minor students must complete the following:

- 9 to 12 credits are required. Students who have not taken FSHN 3600 or its equivalent (advanced nutrition with a biochemistry prerequisite)

will need to take FSHN 3600, in which case the Nutrition Graduate minor will constitute 12 credits.

- 9 credits of graduate level nutrition courses as approved by the POS Committee.
- NUTRS 5010

Certificate - Undergraduate

Health Coach (<https://kin.hs.iastate.edu/current-students/academics/health-coach-certificate/>)

The undergraduate health coach certificate provides a rigorous academic and theoretical background in three components of health (nutrition, exercise and motivational coaching) required to prepare workers for the challenges of being a health coach.

Certificates - Graduate

Food Safety and Defense (<http://www.fshn.hs.iastate.edu/graduate-program/food-safety-defense/>)

The department offers an online 12-13 credit Graduate Certificate in Food Safety and Defense, in conjunction with the University of Nebraska, Lincoln, Kansas State University and the University of Missouri through the Great Plains Interactive Distance Education Alliance. Students may be admitted if qualified for admission to the food science master's degree program.