

THE FIELD

Food science, broadly defined, is the profession that deals with the scientific and technological aspects of foods and related products. Food scientists are concerned with determining the chemical, biological, and physical nature of food in terms of quality, safety, and nutrition. They are also concerned with the application of science and engineering to the processing, storage, and use of food and food-related products. Food scientists' training must be truly interdisciplinary in order to provide the nation and the world with a nutritious, safe, and wholesome food supply.

The Department of Food Science is housed in a modern building that offers excellent classrooms and well-equipped laboratories for in-depth investigation of chemical, microbiological, biochemical, and processing problems associated with food quality and safety. Also available is a well-equipped pilot plant capable of manufacturing a wide variety of pasteurized, frozen, dried, smoked, and fermented food products.

A minor in food science is available.

THE MAJOR

Majors in food science can choose between two major options: food science and technology or food, health, and the environment. A third program in culinary science is available to students who already hold two-year culinary arts degrees.

FOOD SCIENCE AND TECHNOLOGY

This option is designed for students who wish to pursue industrial careers in research or technology development or who wish to enter graduate school. Students take a combination of courses in basic and applied sciences. Required math and science courses include calculus, general chemistry, organic chemistry, analytical chemistry, biology, physics, microbiology, and biochemistry. Food science requirements include food processing, food chemistry, food microbiology, food engineering, and nutrition.

FOOD, HEALTH, AND THE ENVIRONMENT

The food industry is becoming increasingly aware of the interrelationship of foods, health, and the environment. Students in this option study the basic sciences while exploring complex problems related to food policy, nutrition, food safety, and toxicology in order to prepare for jobs in regulation, quality assurance, and product development. Basic math and science requirements include general chemistry and organic chemistry, as well as courses in math, biology, physics, microbiology, and biochemistry. Depending on a student's interest, additional courses in food science, nutrition, environmental science, public health, and resource economics are used to fulfill graduation requirements.

CULINARY SCIENCE

Home-cooked and restaurant-quality foods that are quickly prepared, delicious, and convenient are now the standard sought by consumers. This demand has created job opportunities in the food industry for individuals with expertise in both culinary arts and food science. The Department of Food Science has developed a unique program in Culinology® that has been accredited by the Research Chefs Association. This program combines culinary arts and food science by accepting students with a two-year culinary arts degree and providing them with a science-oriented framework that enables them to obtain a bachelor of science degree in three years. Basic science requirements include general and organic chemistry as well as courses in mathematics, statistics, physics, and microbiology. Food science requirements include food processing, food microbiology, food chemistry, and nutrition.

HONORS

Students may pursue honors opportunities within the major. Contact the honors coordinator, Hang Xiao (413-545-2281, hangxiao@foodsci.umass.edu), for more information.

STUDY ABROAD

Majors may choose to study abroad if it supports their academic and career goals. Students should contact the International Programs Office (413-545-2710, umass.edu/ipo) and work closely with their academic advisor to choose the appropriate courses in preparation.

CAREER OPPORTUNITIES

The sheer size and diversity of the food industry in this country, and the need for food professionals in developing countries, make it possible for an individual to find employment in a wide variety of satisfying areas. Some typical areas in which an individual with a bachelor of science (BS) degree in food science might work are: research and development (investigating scientific principles

of food products); product development (developing new food products or improving the quality and/or safety of existing products); technical sales (serving the food industry with technical knowledge of raw materials, ingredients, and technology for the manufacture of specific food products); quality assurance (analyzing components of food products and monitoring the finished product for conformity with company and government standards); international (helping developing nations improve their food handling and storage procedures through various agencies such as the World Health Organization); regulation (developing policy and enforcing food sanitation and labeling regulations as part of federal and state regulatory agencies); and management (organizing and operating small- to medium-size food processing companies).

A doctorate or master's degree allows for even broader opportunities in basic research and/or teaching in industry, government, or various private and public institutions of higher learning.

COLLEGE OF NATURAL SCIENCES

The College of Natural Sciences unites the life, environmental, computational, and physical sciences on campus. Students take advantage of a range of inquiry-based classroom and laboratory experiences, hands-on undergraduate research opportunities, multidisciplinary and cross-departmental education and research initiatives, and a variety of science student organizations. In addition, they are encouraged to develop strong written and oral communication skills, as well as leadership and problem-solving abilities.

Office: 228 Chenoweth Lab
Phone: 413-545-2276
Website: umass.edu/foodsci