

Exploring Careers in Food Science

Unit. Food Science

Problem Area. Introduction to Food Science

Lesson. Exploring Careers in Food Science

- **Student Learning Objectives.** Instruction in this lesson should result in students achieving the following objectives:

- 1 Identify careers related to food science.**
- 2 Describe the education and skills needed for a career in food science.**
- 3 Identify the two main occupations involved in food science and the food science industry.**

- **List of Resources.** The following resources may be useful in teaching this lesson:

Ward, Janet D. *Principles of Food Science*. Tinley Park, IL: Goodheart Wilcox, 2002. (Chapter 25)

Allen, Phil, et al. *Food Science, Safety, and Nutrition*. Alexandria, VA: The National Council for Agricultural Education, 1993.

Parker, Rick. *Introduction to Food Science*. Albany, NY: Delmar/Thompson Learning, Inc., 2003. (Chapter 28)

Seperich, George J. *Food Science and Safety*. 2nd Edition. Upper Saddle River, New Jersey: Prentice Hall Interstate, 2004.



■ List of Equipment, Tools, Supplies, and Facilities

- ✓ Writing surface
- ✓ Overhead projector
- ✓ Transparencies from attached masters
- ✓ Copies of student lab sheets
- ✓ IFT (Institute of Food Technologists) Video *In Good Taste: Careers in Food Science*

■ Terms. The following terms are presented in this lesson (shown in bold italics):

- ▶ Food scientist
- ▶ Food technologist
- ▶ Pilot plant
- ▶ Quality assurance
- ▶ Research
- ▶ Test production
- ▶ Trouble-shooting

■ Interest Approach. Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Invite a local food science professional to your classroom to speak to the students about the different aspects of his or her career. Examples of speakers may include a restaurant manager, USDA food scientist, or a baker. Use this opportunity to have the students practice their public speaking skills by inviting the speaker themselves. Have the students research the career before class and come up with questions to ask the speaker. The questions could be collected as a graded assignment. Following the presentation, continue with the lesson.

SUMMARY OF CONTENT AND TEACHING STRATEGIES

Objective 1: Identify careers related to food science.

Anticipated Problem: What careers are related to food science?

- I. There are six major career areas in the food science industry. These areas include product development, quality assurance, production, sales and service, regulation and compliance, and food service.
 - A. Careers in product development involve creating new and improved food products. Occupations related to product development include food technicians, scientists, and nutritionists. Work settings include food laboratories and experimental kitchens.
 - B. Careers in quality assurance deal with the quality of food. Work activities include producing and preserving nutritious food products, and packaging, storing, and transporting quality food products.
 - C. Production careers involve preserving, sorting, grading, packaging, and shipping food products. Occupations related to production include supervisors and plant managers.
 - D. Sales and service careers deal with selling food products and materials through advertising and sales calls.
 - E. Careers in regulation and compliance involve enforcing food industry regulations. These regulations are set by the local, state, and federal governments, and help to protect consumers. Job duties may include inspecting processing plants and conducting lab tests. Federal agencies that offer jobs related to regulation and compliance in food science include the FDA, USDA, USDOC, and EPA.
 - F. Food service careers deal with the preparation and serving of food. Work settings include restaurants and cafeterias. Examples of occupations in food service include chefs, sous chefs, cooks, bakers, managers, cashiers, and servers.

Use VM–A to review the major career areas in the food science industry.

Objective 2: Describe the education and skills needed for a career in food science.

Anticipated Problem: What are the education and skills needed for a career in food science?

- II. The level of education needed for a career in food science depends on the desired career.
 - A. Careers in food inspection and safety require a bachelor's degree in family and consumer sciences, food science, agriculture, or biology. Experience in food production or processing and training courses may also be required.
 - B. Careers in the food service industry require a high school diploma and on-the-job training. Culinary arts two-year and four-year degrees are required to become a sous chef or chef. Some food service careers may also require an apprenticeship or further training.
 - C. Careers in the food retail and wholesale industry require a high school diploma and frequently a bachelor's degree in business or marketing. Some jobs may require additional occupational training.
 - D. Careers in research and development require at least a two-year college degree and on-the-job training.
 - E. Careers in marketing and communications require a bachelor's degree in sales or business. Work experience may be needed for advancement.

At this point, discuss with the students their future goals and the education needed to reach them. Use TM-B to review the education and skills needed for a career in food science.

Objective 3: Identify the two main occupations involved in food science and the food science industry.

Anticipated Problem: What are the two main occupations involved in food science and the food science industry?

- III. There are two main professional occupations involved in food science and the food science industry. They are food scientist and food technologist. Both career areas require a significant amount of education and training. Each is important in ensuring a safe, wholesome food supply. There are many entry-level jobs related to food science that may require less education and training.
 - A. A **food scientist** is a person trained in the chemistry, physics, and biology of food and food systems. At the very least, food scientists have earned a bachelor's degree in food science. Most food scientists hold a master's or doctorate degree in food science with training in a specialized area. One of the most important skills required to be a food scientist is that of research. **Research** is the process of

asking questions and seeking answers using controls and collecting data. The nature of work for a food scientist includes developing new food products or altering existing food products. Food scientists may work for universities, the food industry, or government agencies.

- B. A **food technologist** is a person who is trained in the chemistry, physics, and biology of food and food systems, and is concerned with short-term problem solving in food systems. Food technologists usually have at least a bachelor's degree and often a master's degree in food science, chemistry, or biology. In food technology, practical hands-on experience in food science is important. The nature of work for a food technologist involves overseeing the production of large batches of food product. Food technologists have to be willing to troubleshoot to solve problems. **Trouble-shooting** is the ability to view and understand the entire production process and identify trouble areas.
1. Food technologists often do product development work in pilot plants. A **pilot plant** is a scaled-down production plant designed to test a food manufacturing process. Food technologists work together with food scientists to take successful products from this level to the full-scale production level. Products not tested at a pilot plant may be processed in test production. **Test production** is the use of full-scale manufacturing facilities to make smaller batches of a new product.
 2. Food technologists also work with production scheduling and quality assurance. Scheduling production so that the right product is made at the right time is important in producing a good product at a good price. **Quality assurance** is the monitoring of the entire production process for compliance with health, safety, and product standards. Food technologists work at universities, in the food industry, and in government agencies.

■ Use VM–C to review the definitions of food scientist and food technologist. ■

- **Review/Summary.** Use the terms and anticipated questions to review the students' comprehension of the objectives covered in this lesson.
- **Application.** Apply the material covered in this lesson to the attached lab sheet, LS–A.
- **Evaluation.** A test has been included to help evaluate the student comprehension of the objectives covered in this lesson.

■ Answers to Sample Test:

Part One: Matching

1. b
2. c
3. a
4. d

Part Two: Completion

1. Production
2. Food service
3. Product development
4. Regulation and compliance

Part Three: Short Answer

There are two main professional occupations involved in food science and the food science industry. They are food scientist and food technologist. Both career areas require a significant amount of education and training. Each is important in ensuring a safe, wholesome food supply. There are many entry-level jobs related to food science that may require less education and training.

Exploring Careers in Food Science

► Part One: Matching

Instructions: Match the term with the correct response. Write the letter of the term by the definition.

- a. Food scientist
- b. Quality assurance
- c. Research
- d. Food technologist

- _____ 1. The monitoring of the entire production process for compliance with health, safety, and product standards.
- _____ 2. The process of asking questions and seeking answers using controls and collecting data.
- _____ 3. A person trained in the chemistry, physics, and biology of food and food systems.
- _____ 4. A person trained in the chemistry, physics, and biology of food and food systems who is concerned with short-term problem solving in food systems.

► Part Two: Completion

Instructions: Provide the word or words to complete the following statements.

1. _____ careers involve preserving, sorting, grading, packaging, and shipping food products.
2. _____ careers deal with the preparation and serving of food.
3. _____ careers involve creating new and improved food products.



4. _____ and _____ careers involve enforcing food industry regulations.

► **Part Three: Short Answer**

Instructions: Provide information to answer the following question.

What are the two main occupations involved in food science and the food science industry?

SIX MAJOR CAREER AREAS IN THE FOOD SCIENCE INDUSTRY

- ◆ Product development
- ◆ Quality assurance
- ◆ Production
- ◆ Sales and service
- ◆ Regulation and compliance
- ◆ Food service



EDUCATION AND SKILLS NEEDED FOR CAREERS IN FOOD SCIENCE

Careers in food inspection and safety—

- ◆ Require Bachelor's degree in agriculture, biology, or food science.
- ◆ Experience in agriculture production or processing and training courses may also be required.

Careers in the food service industry—

- ◆ Require a high school diploma and on-the-job training.
- ◆ May also require an apprenticeship or further training.

Careers in the food retail and wholesale industry—

- ◆ Require a high school diploma and frequently a bachelor's degree in business or marketing.
- ◆ May require additional occupational training.

Careers in research and development—

- ◆ Require at least a two-year college degree and on-the-job training.

Careers in marketing and communications—

- ◆ Require a bachelor's degree in sales or business.
- ◆ Work experience may be needed for advancement.

TWO MAIN PROFESSIONAL OCCUPATIONS INVOLVED IN THE FOOD SCIENCE INDUSTRY

- ◆ Food scientist—a person trained in the chemistry, physics, and biology of food and food systems.
- ◆ Food technologist—a person who is trained in the chemistry, physics, and biology of food and food systems and is concerned with short-term problem solving in food systems.



Science and Pizza

Instructions:

Answer these questions while watching the IFT video titled *In Good Taste: Careers in Food Science*. Or arrange a visit to a pizza place to observe the making of a pizza, while discussing the points below. Students could then write a paper incorporating the points below in relationship to the pizza making observation.

1. Which sciences are involved in the making of a pizza?
2. Define sensory evaluation.
3. Define product development.
4. Define quality control.
5. Explain what consumers are looking for in a food product.

