

CAREER GUIDE FOR FOOD SCIENCE TECHNICIANS

SOC Code: 19-4011

Pay Band(s): 3 and 4 ([Salary Structure](#))

Standard Occupational Description: Work with agricultural scientists in food, fiber, and animal research, production, and processing; assist with animal breeding and nutrition work; under supervision, conduct tests and experiments to improve yield and quality of crops or to increase the resistance of plants and animals to disease or insects. Includes technicians who assist food scientists or food technologists in the research, development, production technology, quality control, packaging, processing, and use of foods.

19-4011.02 - Food Science Technicians

Perform standardized qualitative and quantitative tests to determine physical or chemical properties of food or beverage products.

Food Science positions in the Commonwealth are assigned to the following Roles in the [Lab and Research Services Career Group](#):

[Lab & Research Specialist I](#)
[Lab & Research Specialist II](#)

While Food Science Technicians within the Commonwealth are all located within the Lab and Research Services Career Group, individuals may want to pursue other career opportunities within the Commonwealth depending upon individual training, education, knowledge, skills, abilities, and interests.

Other Career Group(s) that may be of interest are:

[Veterinary Services](#)
[Environmental Services](#)

SKILLS, KNOWLEDGE, ABILITIES AND TASKS

(Technical and Functional Expertise)

Skills

Note: *The technical and functional skills listed below are based on general occupational qualifications for **Food Science Technicians** commonly recognized by most employers. Typically, you will not be required to have all of the skills listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.*

1. Using scientific rules and methods to solve problems.
2. Understanding written sentences and paragraphs in work related documents.
3. Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
4. Communicating effectively in writing as appropriate for the needs of the audience.
5. Using mathematics to solve problems.

6. Understanding the implications of new information for both current and future problem solving and decision-making.
7. Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
8. Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
9. Determining the kind of tools and equipment needed to do a job.
10. Watching gauges, dials, or other indicators to make sure a machine is working properly.

Knowledge

Note: *The technical and functional knowledge statements listed below are based on general occupational qualifications for **Food Science Technicians** commonly recognized by most employers. Typically, you will not be required to have all of the knowledge listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.*

The **Knowledge** of:

1. The chemical composition, structure, and properties of substances and of the chemical processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs, production techniques, and disposal methods.
2. Arithmetic, algebra, geometry, calculus, statistics, and their applications.
3. Plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.
4. The structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.
5. The techniques and equipment for planting, growing, and harvesting food products (both plant and animal) for consumption, including storage/handling techniques.

Abilities

Note: *The technical and functional abilities listed below are based on general occupational qualifications for **Food Science Technicians** commonly recognized by most employers. Typically, you will not be required to have all of the abilities listed to be a successful performer. Recruitment and selection standards for an individual state job must be based on the specific knowledge, skills, and abilities for that job as indicated in the job announcement and job description in the Employee Work Profile.*

The **Ability** to:

1. See details at close range (within a few feet of the observer).
2. Add, subtract, multiply, or divide quickly and correctly.
3. Communicate information and ideas in writing so others will understand.
4. Arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).
5. Read and understand information and ideas presented in writing.
6. Apply general rules to specific problems to produce answers that make sense.
7. Choose the right mathematical methods or formulas to solve a problem.
8. Tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.
9. Generate or use different sets of rules for combining or grouping things in different ways.
10. Match or detect differences between colors, including shades of color and brightness.

Tasks

Note: The following is a list of sample tasks typically performed by **Food Science Technicians**. Employees in this occupation will not necessarily perform all of the tasks listed.

1. Analyze test results to classify products, or compare results with standard tables.
2. Compute moisture or salt content, percentages of ingredients, formulas, or other product factors, using mathematical and chemical procedures.
3. Conduct standardized tests on food, beverages, additives, and preservatives in order to ensure compliance with standards and regulations regarding factors such as color, texture, and nutrients.
4. Examine chemical and biological samples in order to identify cell structures, and to locate bacteria, or extraneous material, using microscope.
5. Prepare slides and incubate slides with cell cultures.
6. Provide assistance to food scientists and technologists in research and development, production technology, and quality control.
7. Record and compile test results, and prepare graphs, charts, and reports.
8. Clean and sterilize laboratory equipment.
9. Measure, test, and weigh bottles, cans, and other containers in order to ensure hardness, strength, and dimensions that meet specifications.
10. Mix, blend, or cultivate ingredients in order to make reagents or to manufacture food or beverage products.

INTERESTED?

Like people, occupations have traits or characteristics. These characteristics give important clues about the nature of the work and work environment, and give you an opportunity to match your own personal interests to a specific occupation. When you choose a job in an occupation that matches your own interests you have taken an important step in planning a successful and rewarding career.

Food Science occupations are mainly “**Realistic**” because they involve work activities that include practical, hands-on problems and solutions. They often deal with plants, animals, and real-world materials like wood, tools, and machinery. Many of the occupations require working outside, and do not involve a lot of paperwork or working closely with others.

They can also be “**Investigative**” since they frequently involve working with ideas, require an extensive amount of thinking, and can involve searching for facts and figuring out problems mentally.

Food Science occupations are also referred to as “**Conventional**” since they may frequently involve following set procedures and routines, include working with data and details more than with ideas, and usually there is a clear line of authority to follow.

LICENSURE, REGISTRATION, OR CERTIFICATION REQUIREMENTS

Generally this is not required for Food Science Technician positions in state government. However, to improve career advancement opportunities, you should consider post-high school applied science or science-related technology coursework from an accredited college or university.

Some Food Science Technicians have a bachelor's degree in chemistry, biology, or forensic science, or have taken several science and math courses at 4-year colleges. However, technical and community colleges often offer associate degrees in a specific technology or a more general education in science and mathematics. For more information, continue reading "Educational, Training, and Learning Opportunities".

EDUCATIONAL, TRAINING, AND LEARNING OPPORTUNITIES

From the Department of Labor's Occupational Outlook Handbook:

Food Science Technicians use the principles and theories of science and mathematics to solve problems in research and development and to help invent and improve products and processes. However, their jobs are more practically oriented than those of scientists. Technicians set up, operate, and maintain laboratory instruments, monitor experiments, make observations, calculate and record results, and often develop conclusions. They must keep detailed logs of all their work-related activities. Those who work in production monitor manufacturing processes and may be involved in ensuring quality by testing products for proper proportions of ingredients, purity, or for strength and durability.

Food science technicians assist food scientists and technologists in research and development, production technology, and quality control. For example, food science technicians may conduct tests on food additives and preservatives to ensure FDA compliance on factors such as color, texture, and nutrients. They analyze, record, and compile test results; order supplies to maintain laboratory inventory; and clean and sterilize laboratory equipment.

Occupations like Food Science Technician usually require a high school diploma and some vocational training or job-related course work. Some previous work-related skill, knowledge, or experience may be helpful, but usually is not needed. Employees in this occupation need anywhere from a few months to one year of working with experienced employees. In some cases, an associate's or bachelor's degree could be needed.

Some employers will prefer applicants who have at least 2 years of specialized training or an associate degree in applied science or science-related technology or a bachelor's degree in chemistry, biology, or forensic science.

Sources of educational, training, and learning opportunities include:

Virginia Tech
<http://www.vt.edu>

Virginia Community Colleges System
<http://www.vccs.edu>

COMMONWEALTH COMPETENCIES

Competencies are a set of identified behaviors, knowledge, skills, and abilities that directly and positively impact the success of employees and the organization. Competencies can be observed and measured. When consistently demonstrated, competencies make employees particularly effective in their work. Competencies help lay out a road map to career success.

You can use the Commonwealth Competencies to help improve your individual performance by adopting behaviors that make high performing employees successful in their jobs. In this way, you can use the Commonwealth Competencies for your further professional development.

The Commonwealth Competencies are:

1. Technical and Functional Expertise
2. Understanding the Business
3. Achieving Results
4. Serving the Customer
5. Teamwork
6. Interpersonal and Communication Skills
7. Leadership and Personal Effectiveness

The above competencies may be applied to employees throughout the Commonwealth of Virginia. They can be rank-ordered by agencies and hiring managers to represent the needs of a specific job. The rank ordering will change depending upon the occupation, an organization's priorities, the actual job requirements, and the supervisor's preferences.

Career success is both about what you do (applying your technical knowledge, skills, and ability) and how you do it (the consistent behaviors you demonstrate and choose to use) while interacting and communicating with others. Hopefully, by studying the Commonwealth competencies, identifying your developmental opportunities, and working to refine your own competence, you can take charge of your career!

For additional information about the **Commonwealth Competencies** go to: http://jobs.state.va.us/cc_planningctr.htm. For the competencies, we first list the competencies and then define each. Finally, we list competency indicators; to describe what successful performance looks like.

COMMONWEALTH CAREER PATH

Career opportunities in the Commonwealth are not limited to moving “up” to the next highest role and pay band, changing positions, or to becoming a supervisor. That’s because most roles describe a broad group of occupationally related positions that perform a range of work that requires increased knowledge and skills. For that reason, Commonwealth roles describe the career paths within the same or higher-level role for the same or different Career Group. The broad salary range and the Commonwealth’s pay practices provide flexibility in recognizing career development and advancement. ([Salary Structure](#))

For example:

PAY BAND	PRACTITIONER ROLES	MANAGEMENT ROLES
1	Laboratory and Research Aide	
2	Laboratory and Research Technician	
3	Laboratory and Research Specialist I	

4	Laboratory and Research Specialist II	
5		Laboratory and Research Manager

Sample Career Path

Laboratory and Research Aide

The Laboratory and Research Aide role provides career tracks for laboratory aides and laboratory animal caretakers who follow a highly structured schedule in performing simple, repetitive tasks under the immediate supervision of higher-level laboratory, or research personnel. Typical duties include washing and sterilizing glassware and equipment; receiving, distributing and preparing packages, samples and supplies; preparing sample test kits, and preparing media.

Laboratory and Research Technician

The Laboratory and Research Technician role provides career tracks for laboratory technicians, geological technicians, and laboratory animal caretakers that perform a variety of laboratory and/or research tasks in support of research/teaching, clinical services, geological services, field research or a regulatory laboratory. Employees are responsible for a variety of standard procedures that range from routine to specialized in the areas of cleaning and decontamination; media preparation; performing standard/routine laboratory testing; sectioning and preparing rock and mineral samples for various mineralogical and laboratory analyses; preparing samples; assisting in autopsy, necropsy, or routine surgical procedures; maintaining animal health and welfare; recording data, and operating and maintaining tools and equipment.

Laboratory and Research Specialist I

The Laboratory and Research Specialist I role provides career tracks for autopsy technicians, laboratory specialists, research specialists, assistants to chemists, microbiologists and other scientists who support in the performance of various technical, scientific, analytical or animal care activities for clinical, research, regulatory or laboratory programs, or in a veterinary hospital or animal care facility. Laboratory and research support responsibilities range from journey-level to advanced.

Laboratory and Research Specialist II

The Laboratory and Research specialist II role provides career tracks for both employees who are laboratory specialists and research specialists performing advanced to expert level responsibilities and for supervisors in a laboratory, field setting, animal care facility or for scientific research. The first track is for positions conducting complex scientific procedures or research for a laboratory or program manager, principal investigator or project director. The second track is for laboratory and research specialists who continue to deliver scientific services while assuming additional supervisory and administrative responsibilities.

Laboratory and Research Manager

The Laboratory and Research Manager role provides career tracks for managers of laboratories in a teaching, research, clinical, service or regulatory setting. Employees are responsible for making administrative decisions related to all laboratory operations and exercise broad-based administrative responsibility for all laboratory functions and personnel.

ADDITIONAL OCCUPATIONAL INFORMATION CAN BE FOUND AT:

O*NET (Occupational Information Network)

<http://online.onetcenter.org/>

Virginia Employment Commission

<http://www.alex.vec.state.va.us/>

Department of Professional & Occupation Regulation

http://www.state.va.us/dpor/conNEW_req.pdf

Career One Stop

<http://www.careeronestop.org/>

Virginia Career Resource Network

<http://www.vacrn.net/>