

CAREER GUIDE FOR ELECTRONIC ENGINEERING TECHNICIAN

SOC Code: 17-3023.01

Pay Band(s): 3,4 and 5 ([Salary Structure](#))

Standard Occupational Description: Lay out, build, test, troubleshoot, repair, and modify developmental and production electronic components, parts, equipment, and systems, such as computer equipment, missile control instrumentation, electron tubes, test equipment, and machine tool numerical controls, applying principles and theories of electronics, electrical circuitry, engineering mathematics, electronic and electrical testing, and physics. Usually work under direction of engineering staff.

Electronic Engineering Technician positions in the Commonwealth are assigned to the following Roles in the [Engineering Technology Career Group](#):

[Engineering Technician II](#)

[Engineering Technician III](#)

[Engineering Technician IV](#)

While Electronic Engineering Technicians within the Commonwealth are all located within the Engineering Technology Career Group, individuals may want to pursue other opportunities within the Commonwealth depending upon individual training, education, knowledge, skills, abilities, and interests.

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

[Electronics](#)

[Media and Production](#)

[Equipment Service and Repair](#)

[Computer Operations](#)

[Training and Instruction](#)

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 Electronic Engineering 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. Determining causes of operating errors and deciding what to do about it.
2. Using mathematics to solve problems.
3. Understanding the implications of new information for both current and future problem-solving and decision-making.
4. Understanding written sentences and paragraphs in work related documents.
5. Using scientific rules and methods to solve problems.
6. Analyzing needs and product requirements to create a design.

7. Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
8. Communicating effectively in writing as appropriate for the needs of the audience.
9. Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
10. Determining the kind of tools and equipment needed to do a job.

Knowledge

Note: *The technical and functional knowledge statements listed below are based on general occupational qualifications for Electronic Engineering 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. Circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.
2. Practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.
3. Design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings, and models.
4. Arithmetic, algebra, geometry, calculus, statistics, and their applications.
5. Structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.
6. Machines and tools, including their designs, uses, repair, and maintenance.
7. Raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.

Abilities

Note: *The technical and functional abilities listed below are based on general occupational qualifications for Electronic Engineering 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. Read and understand information and ideas presented in writing.
2. Imagine how something will look after it is moved around or when its parts are moved or rearranged.
3. Listen to and understand information and ideas presented through spoken words and sentences.
4. Communicate information and ideas in writing so others will understand.
5. Apply general rules to specific problems to produce answers that make sense.
6. Tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.
7. Choose the right mathematical methods or formulas to solve a problem.
8. Add, subtract, multiply, or divide quickly and correctly.
9. Quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.
10. Keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.

Tasks

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

Tasks

1. Adjust and replace defective or improperly functioning circuitry and electronics components, using hand tools and soldering iron.
2. Assemble, test, and maintain circuitry or electronic components according to engineering instructions, technical manuals, and knowledge of electronics, using hand and power tools.
3. Build prototypes from rough sketches or plans.
4. Fabricate parts, such as coils, terminal boards, and chassis, using bench lathes, drills, or other machine tools.
5. Read blueprints, wiring diagrams, schematic drawings, and engineering instructions for assembling electronics units, applying knowledge of electronic theory and components.
6. Test electronics units, using standard test equipment, and analyze results to evaluate performance and determine need for adjustment.
7. Design basic circuitry and draft sketches for clarification of details and design documentation under engineers' direction, using drafting instruments and computer aided design equipment.
8. Develop and upgrade preventative maintenance procedures for components, equipment, parts and systems.
9. Identify and resolve equipment malfunctions, working with manufacturers and field representatives as necessary to procure replacement parts.
10. Maintain system logs and manuals to document testing and operation of equipment.

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.

The occupation of Electronic Engineering Technician has **Realistic, Investigative** and **Conventional** characteristics as described below:

Realistic — Realistic occupations frequently 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.

Investigative — Investigative occupations frequently involve working with ideas, and require an extensive amount of thinking. These occupations can involve searching for facts and figuring out problems mentally.

Conventional — Conventional occupations frequently involve following set procedures and routines. These occupations can include working with data and details more than with ideas. Usually there is a clear line of authority to follow.

LICENSURE, REGISTRATION, OR CERTIFICATION REQUIREMENTS

Generally this is not required for Electronic Engineering Technician positions in state government.

The National Institute for Certification in Engineering Technologies (NICET) <http://www.nicet.org> has established a voluntary certification program for engineering technicians. Certification is available at various levels, each level combining a written examination in 1 of about 30 specialties with a certain amount of job-related experience, a supervisory evaluation, and a recommendation.

Certification may enhance professional growth and career progression.

EDUCATIONAL, TRAINING, AND LEARNING OPPORTUNITIES

The Department of labor provides the following information:

Electronic engineering technicians help to design, develop, test, and manufacture electrical and electronic equipment such as communication equipment, radar, industrial and medical measuring or control devices, navigational equipment, and computers. They may work in product evaluation and testing, using measuring and diagnostic devices to adjust, test, and repair equipment.

Although it may be possible to qualify for certain engineering technician jobs without formal training, most employers prefer to hire someone with at least a 2-year associate degree in engineering technology. Training is available at technical institutes, community colleges, extension divisions of colleges and universities, and public and private vocational-technical schools, and in the Armed Forces.

An Associate degree as a minimum is recommended.

The State Council of Higher Education lists many Virginia educational institutions (community colleges) offering programs in electrical, electronics and engineering related technology on their web site: http://research.schev.edu/degreeinventory/inventory_2.asp?from=k12

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: **Electronic Engineering Technician**

PAY BAND	PRACTITIONER ROLES
3	Engineering Technician II
4	Engineering Technician III
5	Engineering Technician IV

PAY BAND	MANAGER ROLES

Sample Career Path

Engineering Technician II

The Engineering Technician II role provides career tracks for engineering technicians performing at the journey level who apply technical skills in support of specialized tasks, phases and/or segments of a specialty-engineering project or assignment. Duties include drafting and sketching of engineering plans or other specialty activities to ensure accurate program execution and compliance with Department, State and Federal regulations and standards.

Engineering Technician III

The Engineering Technician III role provides career tracks for engineering technicians performing responsibilities ranging from advanced level to supervisory in support of a broad range of engineering specialty activities. Duties involve interpreting engineering guidelines; coordinating varied activities; performing engineering drafting and design work; providing technical assistance to others; and performing detailed reviews of engineering related projects.

Engineering Technician IV

The Engineering Technician IV role provides career tracks for engineering technicians who perform as experts and/or supervisors of technical specialty engineering support and/or coordination of research, planning, and design of comprehensive engineering projects and activities. Duties range from ensuring that projects, programs and procedures are effectively and efficiently administered to providing practical technical expertise in making decisions in the review, analysis, coordination and delivery of a specialty engineering function.

ADDITIONAL OCCUPATIONAL INFORMATION CAN BE FOUND AT:

O*NET (Occupational Information Network)

http://online.onetcenter.org/gen_search_page

Virginia Employment Commission

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

Career One Stop

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

Virginia Career Resource Network

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