Engineering Technologies/Technicians
CIP Code 15.9999

Introduction – Program of Study

Engineering technicians use the principles and theories of science, engineering, and mathematics to solve technical problems in research and development, manufacturing, sales, construction, inspection and maintenance. Their work is more narrowly focused and application oriented than that of scientists and engineers. Many engineering technicians assist engineers and scientists, especially in research and development. Others work in quality control, inspecting products and processes, conducting tests, or collecting data. In manufacturing, they may assist in product design, development or production.

Engineering technicians solve technical problems. They may assist engineers and scientists with research and development. They build or setup equipment and conduct experiments. They collect data and calculate results to make models of new equipment. Technicians may work in quality control where they check products, perform tests and collect data. In manufacturing, they help to design and develop products. They also discover ways to produce items efficiently.

Aerospace engineers perform engineering duties in designing, constructing and testing aircraft, missiles and spacecraft. They may conduct basic and applied research to evaluate the adaptability of materials and equipment to aircraft design and manufacture.

Civil engineers perform engineering duties in planning, designing and overseeing construction and maintenance of building structures and facilities such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, and water and sewage systems.

Electrical engineers research, design, develop, test, or supervise the manufacturing and installation of electrical equipment, components, or systems for commercial, industrial, military or scientific use.

Environmental engineers research, design, plan or perform engineering duties in the prevention, control and remediation of environmental hazards using various engineering disciplines. Work may include waste treatment, site remediation or pollution control technology.

Industrial engineers design, develop, test and evaluate integrated systems for managing industrial manufacturing production processes, including human work factors, quality control, inventory control, logistics and material flow, cost analysis and manufacturing production

coordination.

Mechanical engineers perform engineering duties in planning and designing tools, engines, machines and other mechanically functioning equipment. They may oversee the installation, operation, maintenance and repair of equipment such as centralized heat, gas, water and steam systems.

This program prepares individuals to apply knowledge and skills in the engineering field. Instruction may include history and ethics; problem solving; power and energy; engineering graphics; automated systems; fundamental electronics; manufacturing systems and processes; green energy; properties and strength of natural, composite and synthetic materials; total quality control; and electricity and electronics.

Assumptions of this Program of Study

High quality programs should meet the following standards:

1. Promote positive working relationships.
2. Implement a curriculum that fosters all areas of skill development
3. Use appropriate and effective teaching approaches.
4. Provide ongoing assessments of student progress.
5. Employ and support qualified teaching staff.
6. Establish and maintain relationships and use resources of the community.
7. Provide a safe and healthy learning environment.
8. Implement strong program organization and supervision policies that result in high quality teaching and learning.
9. Integrate academic skills and aptitudes necessary for postsecondary education, gainful employment and a foundation of lifelong learning.

CIP Code

15.9999 Engineering Technologies/Technicians

This program prepares individuals to apply knowledge and skills in the engineering field. Instruction includes, but is not limited to, safety, ethics, power, problem solving, teamwork, engineering graphics, automated systems, fundamental electronics and manufacturing systems as well as adhering to the Science, Technology, Engineering and Mathematics (STEM) Initiative.

For more information, contact:

The Pennsylvania Department of Education
Bureau of Career and Technical Education
333 Market Street, 11th Floor
Harrisburg, PA 17126-0333
Phone: 717-346-9735
Fax: 717-783-6672
TTY: 717-783-7445