



Canadian Council of Technicians and Technologists
Conseil canadien des techniciens et technologues

My Career in...

Are you a student looking for a great career?

A career as a certified technician or technologist might be just what you are looking for! Canada's certified technicians and technologists are well-paid and respected members of Canada's engineering teams. As leaders in their fields, they enjoy fun and worthwhile careers across Canada and around the world. We have assembled profiles of careers that fall into the 14 disciplines of technicians and technologists on the following pages. Read on to learn more about more about what technicians and technologists do, and how to become one, and then discover a cool career that's exactly what you're looking for!





Bioscience

Biological technicians and technologists work with scientists, engineers and other professionals in fields such as agriculture, resource management, environmental protection, plant and animal biology, microbiology, cell and molecular biology and health sciences, or may work independently in these fields. They are employed in both laboratory and field settings by governments, manufacturers of food products, chemicals and pharmaceuticals, biotechnology companies, health, research and educational institutions, environmental consulting companies and resource and utilities companies.

AGRICULTURAL TECHNICIAN

AGRICULTURAL
TECHNOLOGIST

AGROLOGY TECHNICIAN

AQUACULTURE TECHNICIAN

BACTERIOLOGICAL
TECHNICIAN

BIOLOGICAL LABORATORY
TECHNOLOGIST

BOTANICAL TECHNICIAN

FISH HATCHERY TECHNICIAN

FISHERIES TECHNICIAN

FOOD BACTERIOLOGICAL
TECHNICIAN

MICROBIOLOGY QUALITY
CONTROL TECHNOLOGIST

MICROBIOLOGY
TECHNOLOGIST

PLANT BREEDING
TECHNICIAN

WILDLIFE BIOLOGY
TECHNICIAN

BIOCHEMISTRY
TECHNOLOGISTS

BIOCHEMISTRY
LABORATORY TECHNICIANS

BIOMEDICAL ENGINEERING
TECHNOLOGISTS

ENVIRONMENTAL
TECHNOLOGIST

RESOURCE MANAGEMENT
TECHNOLOGIST

On the Job...

Things that biological technicians and technologists do at work are:

- ✓ Conduct or assist in biological, microbiological and biochemical tests and laboratory analyses in support of quality control in food production, sanitation, pharmaceutical production and other fields
- ✓ Perform or assist in experimental procedures in agriculture, plant breeding, animal husbandry, biology and biomedical research
- ✓ Conduct field research and surveys to collect data and samples of water, soil, plant and animal populations
- ✓ Conduct or assist in environmental monitoring and compliance activities for the protection of fisheries stock, wildlife and other natural resources
- ✓ Conduct or supervise operational programs such as fish hatchery, greenhouse and livestock production programs.
- ✓ Analyze data and prepare reports

Educational Requirements:

- ✓ Completion of a two- to three-year college program in a field related to agriculture, biology, microbiology, wildlife or resource management is usually required for employment as a biological technologist.
- ✓ Completion of a one- to two-year college program in a related field is required for employment as a biological technician.
- ✓ Voluntary certification with provincial associations is available.



Building

Architectural technicians and technologists work independently or with professional architects and civil design engineers in conducting research, preparing drawings, architectural models, specifications and contracts and in supervising construction projects. Architectural technologists and technicians are employed by architectural and construction firms, and governments.

ARCHITECTURAL
TECHNICIAN

ARCHITECTURAL
TECHNOLOGIST

COMPUTER-ASSISTED
DRAFTING (CAD)
TECHNICIAN

DRAFTSPERSON

ENGINEERING DESIGN AND
DRAFTING TECHNOLOGIST

SUPERVISOR, DRAFTING
OFFICE

CONSTRUCTION
TECHNOLOGIST

BUILDING
ENGINEERING
TECHNOLOGIST

On the Job...

Things that architectural technicians and technologists do at work are:

- ✓ Assist in the development of architectural designs
- ✓ Analyze building codes, by-laws, space requirements, site requirements and other technical documents and reports
- ✓ Prepare manual and CAD (computer-assisted design) drawings, specifications, cost estimates and listings of quantities of material from conceptual drawings and instructions
- ✓ Construct architectural and display models, and 3-D virtual models of architectural designs
- ✓ Prepare contract and bidding documents
- ✓ May supervise drafters, technicians and technologists on the architectural team
- ✓ May supervise construction projects and coordinate, monitor and inspect work done by others.

Educational Requirements:

- ✓ Completion of a two- to three-year college program in architectural technology or a related subject is usually required.
- ✓ Certification in architectural technology or in a related field through provincial associations of architectural or engineering/applied science technologists and technicians may be required by employers.
- ✓ A period of supervised work experience, usually two years, is required before certification.
- ✓ In Quebec, membership in the regulatory body is required to use the title of Professional Technologist.



Chemical

Chemical technicians and technologists work in chemical engineering, chemical and biochemical research and analysis, industrial chemistry, chemical quality control and environmental protection. They are employed by research and development and quality control laboratories, consulting engineering companies, in chemical, petrochemical, pharmaceutical and a variety of other manufacturing and processing industries, and by utilities, health, education and government establishments.

ANALYTICAL TECHNICIAN,
CHEMICAL

BIOCHEMISTRY
TECHNOLOGIST

CHEMICAL ANALYST

CHEMICAL ENGINEERING
TECHNICIAN

CHEMICAL ENGINEERING
TECHNOLOGIST

CHEMICAL LABORATORY
ANALYST

CHEMICAL RESEARCH
TECHNICIAN

CHEMICAL TECHNICIAN

CHEMICAL TECHNOLOGIST

FOOD TECHNOLOGIST

FORMULATION TECHNICIAN

GEOCHEMICAL TECHNICIAN

INDUSTRIAL HYGIENE
TECHNOLOGIST

MASS SPECTROMETER
TECHNICIAN

MASTER DYER - TEXTILES
PAINT TECHNICIAN

PILOT PLANT TECHNICIAN
QUALITY CONTROL

TECHNICIAN - CHEMICAL
PROCESSING

FOOD
PROCESSING TECHNOLOGIST

On the Job...

Things that Chemical technicians and technologists do at work are:

- ✓ Set up and conduct chemical experiments, tests and analyses using techniques such as chromatography, spectroscopy, physical and chemical separation techniques and microscopy
- ✓ Operate and maintain laboratory equipment and apparatus and prepare solutions of gas or liquid, reagents, and sample formulations
- ✓ Compile records and interpret experimental or analytical results
- ✓ Develop and conduct programs of sampling and analysis to maintain quality standards of raw materials, chemical intermediates and products
- ✓ Assist in the development of chemical engineering processes, studies of chemical engineering procurement, construction, inspection and maintenance and the development of standards, procedures and health and safety measures
- ✓ Operate experimental chemical or petrochemical pilot plants
- ✓ Conduct or assist in air and water quality testing and assessments, environmental monitoring and protection activities and in the development of and compliance with standards
- ✓ Assist in the design and fabrication of experimental apparatus.

Educational Requirements:

- ✓ Chemical technologists usually require completion of a two- or three-year college program in chemical, biochemical or chemical engineering technology or a closely related discipline.
- ✓ Chemical technicians usually require completion of a one- or two-year college program in chemical, biochemical or chemical engineering technology
- ✓ A period of supervised work experience, usually two years, is required before certification.



Civil

Civil engineering technicians and technologists work with scientists, engineers and other professionals, or may work independently in fields such as structural engineering, municipal engineering, construction design and supervision, highways and transportation engineering, water resources engineering, geotechnical engineering and environmental protection. They are employed by consulting engineering and construction companies, public works, transportation and other government departments and in many other industries.

CIVIL ENGINEERING
TECHNICIAN

CIVIL ENGINEERING
TECHNOLOGIST

CONSTRUCTION
ESTIMATORS

CONSTRUCTION
INSPECTORS

CONSTRUCTION MANAGERS

LAND SURVEY
TECHNOLOGISTS

BRIDGE DESIGN TECHNICIAN

BUILDING MATERIALS
TECHNICIAN

CONSTRUCTION
TECHNOLOGIST

HIGHWAY TECHNICIAN

MUNICIPAL ENGINEERING
ASSISTANT

SOIL TECHNOLOGIST - CIVIL
ENGINEERING

SPECIFICATIONS WRITER,
CONSTRUCTION

STRUCTURAL DESIGN
TECHNOLOGIST

STRUCTURAL INVESTIGATOR

ENGINEERING,
DESIGN AND DRAFTING
TECHNOLOGIST

On the Job...

Things that civil technicians and technologists do at work are:

- ✓ Develop engineering designs and drawings from preliminary concepts and sketches
- ✓ Prepare construction specifications, cost and material estimates, project schedules and reports
- ✓ Supervise or conduct field surveys, inspections or technical investigations of topography, soils, drainage and water supply systems, road and highway systems, buildings and structures to provide data for engineering projects
- ✓ Conduct or supervise inspection and testing of construction materials
- ✓ May supervise, monitor and inspect construction projects.

Educational Requirements:

- ✓ Completion of a two- or three-year college program in civil engineering technology or a closely related discipline is usually required for civil engineering technologists.
- ✓ Completion of a one- or two-year college program in civil engineering technology is usually required for civil engineering technicians.
- ✓ Certification in civil engineering technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required for some positions.



- BROADCAST COMMUNICATIONS TECHNOLOGIST
- ELECTRICAL ENGINEERING TECHNICIAN
- ELECTRICAL ENGINEERING TECHNOLOGIST
- ELECTRICITY DISTRIBUTION NETWORK TECHNOLOGIST
- ELECTRONICS DESIGN TECHNOLOGIST
- ELECTRONICS ENGINEERING TECHNICIAN
- ELECTRONICS ENGINEERING TECHNOLOGIST
- ELECTRONICS MANUFACTURING TECHNICIAN/TECHNOLOGIST
- METERING TECHNOLOGIST
- PRODUCTION SUPPORT TECHNICIAN - ELECTRONICS MANUFACTURING
- AUDIO-VIDEO SERVICE TECHNICIAN
- COMPUTER SERVICE TECHNICIAN
- ELECTRONIC SERVICE TECHNICIAN/SUPERVISOR
- FIELD SERVICE TECHNICIAN, ELECTRONIC PRODUCTS
- OFFICE EQUIPMENT SERVICE TECHNICIAN
- TELECOMMUNICATIONS ENGINEERING TECHNOLOGIST
- AVIONICS ENGINEERING TECHNOLOGY
- ENGINEERING DESIGN AND DRAFTING TECHNOLOGIST

Electrical and Electronics

Electrical and electronics engineering technicians and technologists work independently or in teams to support the design, development, testing, production and operation of electrical and electronic equipment and systems. They are employed by electrical utilities, communications companies, manufacturers of electrical and electronic equipment, consulting firms, and in governments and a wide range of manufacturing, processing and transportation industries.

On the Job...

Things that electrical and electronics engineering technicians and technologists do at work are:

- ✓ Design, develop and test power equipment and systems, industrial process control systems, telecommunication, broadcast, recording and audiovisual systems, micro-electronic systems and circuits, computers, computer systems and networks, and computer software
- ✓ Supervise the building and testing of prototypes according to general instructions and established standards
- ✓ Conduct or supervise the installation, commissioning, and operation of electrical and electronic equipment and systems other than aircraft electronics or instruments
- ✓ Carry out applied research in fields of electrical and electronic engineering and physics under the direction of scientists or engineers
- ✓ Set up and operate specialized and standard test equipment to diagnose, test and analyze the performance of electrical and electronic components, assemblies and systems
- ✓ Write specifications, schedules and technical reports

Educational Requirements:

- ✓ Completion of a two- or three-year college program in electrical or electronics engineering technology, computer engineering technology, telecommunications technology or an equivalent
- ✓ Completion of a one- or two-year college program in electrical or electronics engineering technology is usually required for electrical or electronics engineering technicians.



Forestry

Forestry technicians and technologists work in technical and supervisory functions in support of forestry research, forest management, forest harvesting, forest resource conservation and environmental protection. They are employed by the forest industry sector, provincial and federal governments, consulting firms, and other industries and institutions or they may be self-employed.

FOREST ENGINEERING
TECHNOLOGIST

FOREST RESOURCES
TECHNOLOGIST

FOREST RECREATION
TECHNOLOGIST

GEOGRAPHIC INFORMATION
SYSTEMS (GIS) TECHNICIAN

MAP EDITOR

MAPPING TECHNICIAN

PHOTOGRAMMETRIC
TECHNOLOGIST

REMOTE SENSING (RS)
TECHNICIAN

AIRBORNE GEOPHYSICAL
EQUIPMENT OPERATORS

On the Job...

Things that Forestry technicians and technologists do at work are:

- ✓ Conduct, supervise and participate in forest inventory cruises, surveys and field measurements
- ✓ Assist and perform technical functions in the preparation of forest management and harvest plans using photogrammetric and mapping techniques and computerized information systems
- ✓ Assist in planning and supervise construction of access routes and forest roads
- ✓ Implement, supervise and perform technical functions in silvicultural operations involving site preparation, planting, and tending of tree crops
- ✓ Co-ordinate activities such as timber scaling, forest fire suppression, disease or insect control or pre-commercial thinning of forest stands
- ✓ Supervise and perform technical functions in harvesting operations
- ✓ Monitor activities of logging companies and contractors and enforce regulations such as those concerning environmental protection, resource utilization, fire safety and accident prevention
- ✓ Provide forestry education, advice and recommendations to woodlot owners, community organizations and the general public
- ✓ Supervise forest tree-nursery operations
- ✓ Provide technical support to forestry research programs in areas such as tree improvement, seed orchard operations, insect and disease surveys or experimental forestry and forest engineering research.

Educational Requirements:

- ✓ Completion of a one- to three-year college program in forestry technology or in a renewable resource program or forest ranger program is usually required.
- ✓ Certification by, or registration with, a provincial association as a forestry technologist or technician may be required.
- ✓ Certification or licensing as a scaler is required for some positions.



AERIAL SURVEY TECHNICIAN

CARTOGRAPHER

CARTOGRAPHIC TECHNICIAN

GEOGRAPHIC INFORMATION
SYSTEMS (GIS) TECHNICIAN

MAP EDITOR

MAPPING TECHNICIANS AND
TECHNOLOGISTS

PHOTOGRAMMETRIC
TECHNOLOGIST

PHOTOGRAMMETRIST

REMOTE SENSING (RS)
TECHNICIAN

SOFTCOPY
PHOTOGRAMMETRIST

AIRBORNE GEOPHYSICAL
EQUIPMENT OPERATORS

SURVEY TECHNOLOGISTS
AND TECHNICIANS

Geomatics

Mapping and related technicians and technologists gather, analyze, interpret and use geospatial information for applications in natural resources, geology, environment and land use planning. This unit group includes technologists and technicians who design and prepare maps, interpret aerial photographs, operate interpretative and airborne remote sensing equipment, and develop and operate geographical information systems. They are employed by all levels of government, the armed forces, utilities, mapping, computer software, forestry, architectural, engineering and consulting firms and other related establishments.

On the Job...

Things that Cartographic technicians and technologists do at work are:

- ✓ Plan map content, format and design and compile required data from aerial photographs, survey notes, records, reports and other maps
- ✓ Generate maps and related graphs and charts using digital mapping techniques, computer interactive graphics, computer assisted design and drafting (CAD) software, traditional drafting methods and computer or traditional scribing tools
- ✓ Inspect final compositions to ensure completeness and accuracy.

Things that Photogrammetric technicians and technologists do are:

- ✓ Examine and interpret aerial photographs to prepare topographic maps, aerial-photograph mosaics and related charts
- ✓ Operate digitized stereoscopic plotting and computer graphics equipment to provide three-dimensional optical models of terrain, to trace maps, and to prepare charts and tables
- ✓ Operate airborne remote sensing equipment such as survey film or digital cameras, laser or radar sensors and scanners which produce images of large areas of the earth, coastline, or of the atmosphere
- ✓ Monitor recording quality and adjust equipment as required and inspect quality of recorded images.



Geomatics *(continued)*

AERIAL SURVEY TECHNICIAN

CARTOGRAPHER

CARTOGRAPHIC TECHNICIAN

GEOGRAPHIC INFORMATION
SYSTEMS (GIS) TECHNICIAN

MAP EDITOR

MAPPING TECHNICIANS AND
TECHNOLOGISTS

PHOTOGRAMMETRIC
TECHNOLOGIST

PHOTOGRAMMETRIST

REMOTE SENSING (RS)
TECHNICIAN

SOFTCOPY
PHOTOGRAMMETRIST

AIRBORNE GEOPHYSICAL
EQUIPMENT OPERATORS

SURVEY TECHNOLOGISTS
AND TECHNICIANS

On the Job...

Things that Remote sensing technicians and technologists do at work are:

- ✓ Operate analog or computer-based remote sensing interpretive equipment to prepare images, graphic and alphanumeric reports, maps and charts from airborne or satellite data
- ✓ Develop specialized analog and computer software specific routines to customize and integrate image analysis
- ✓ Verify the integrity and accuracy of data contained in remote sensing image analysis systems.

Things that Geographic information systems (GIS) technicians and technologists do at work are:

- ✓ Operate specialized computer hardware and software and peripheral equipment to model, manage, analyze and display geospatial data
- ✓ Develop specialized computer software routines, internet based GIS, database and business applications to customize geographic information
- ✓ Work with external organizations on data transfer and systems compatibility issues
- ✓ Perform data entry and editing activities and maintenance operations to systems following pre-determined calibration procedures

Educational Requirements:

- ✓ Completion of secondary school is required.
- ✓ Technologists in this unit group require completion of a two to three-year college program in cartography, photogrammetry, aerial survey, remote sensing, geographic information system or geomatics.
- ✓ Technicians in this unit group require completion of a one to two-year college program in cartography, photogrammetry, aerial survey, remote sensing, geographic information system or geomatics.



Industrial

Industrial engineering and manufacturing technicians and technologists work independently or in teams on the development of production methods, facilities and systems, and the planning, estimating, measuring and scheduling of work. They are employed by manufacturing and insurance companies, government departments and in other industries.

CAD/CAM PROGRAMMER

INDUSTRIAL ENGINEERING
TECHNICIAN

INDUSTRIAL ENGINEERING
TECHNOLOGIST

LOSS PREVENTION
TECHNOLOGIST

MANUFACTURING
TECHNICIAN

MANUFACTURING
TECHNOLOGIST

PLANNING TECHNICIAN

PLASTICS MANUFACTURING
TECHNICIAN

PULP AND PAPER
MANUFACTURING
TECHNOLOGIST

QUALITY ASSURANCE
TECHNOLOGIST

SCHEDULING TECHNICIAN,
MANUFACTURING

ENGINEERING DESIGN
AND DRAFTING
TECHNOLOGIST

On the Job...

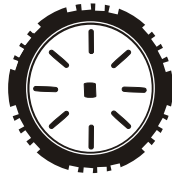
Things that Industrial technicians and technologists do at work are:

- ✓ Develop and conduct production, inventory and quality assurance programs in manufacturing or in other industries
- ✓ Design plant layouts and production facilities
- ✓ Develop and carry out work study and related programs
- ✓ Develop and carry out industrial health, safety and fire prevention plans and programs and conduct safety training programs
- ✓ Develop applications using CAD/CAM (computer-assisted drafting, computer-assisted manufacturing) for the control of robots, computer numerical control (CNC) machines and other manufacturing processes and operations.

Technologists and technicians in this unit group may specialize in the development of production processes, quality assurance programs, plans and schedules in a particular industrial area such as metal fabrication, plastics, pulp and paper, or textile manufacturing.

Educational Requirements:

- ✓ Completion of a two- or three-year college program or equivalent in industrial engineering technology, pulp and paper technology, plastics technology, textile technology, manufacturing technology or in a related discipline is usually required for industrial engineering or manufacturing technologists.
- ✓ Certification in industrial engineering or manufacturing technology or in a related field is available through provincial associations
- ✓ A period of supervised work experience, usually two years, is required before certification.

INDUSTRIAL PROCESSES
CONTROL TECHNOLOGIST

INSTRUMENT TECHNICIAN

INDUSTRIAL
INSTRUMENTATION
TECHNICIANAIRCRAFT INSTRUMENT
TECHNICIANSINDUSTRIAL MECHANICS
TECHNOLOGISTS

Instrumentation

Industrial instrument technicians and mechanics repair, maintain, calibrate, adjust, and install industrial measuring and controlling instrumentation. They are employed by pulp and paper processing companies, nuclear and hydro power generating companies, mining, petrochemical and natural gas companies, industrial instrument and other manufacturing companies, and by industrial instrument servicing establishments.

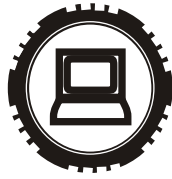
On the Job...

Things that Industrial instrument technicians and technologists do at work are:

- ✓ Consult manufacturer's manuals, circuit diagrams and blueprints to determine tests and maintenance procedures for instruments used for measuring and controlling flow, level, pressure, temperature, chemical composition and other variables in manufacturing and processing
- ✓ Inspect and test operation of instruments and systems to diagnose faults using pneumatic, electrical and electronic testing devices and precision measuring instruments
- ✓ Repair and adjust system components, such as sensors, transmitters and programmable logic controllers, or remove and replace defective parts
- ✓ Calibrate components and instruments according to manufacturers' specifications

Educational Requirements:

- ✓ Completion of a four- or five-year apprenticeship program in industrial instrument repair, or completion of a two-year college program in industrial instrumentation technology and several years of work experience are usually required for trade certification.
- ✓ Industrial instrument mechanic trade certification is available, but voluntary, in several but not all provinces and territories.



COMPUTER SYSTEMS
TECHNOLOGIST

COMPUTER
PROGRAMMING
TECHNOLOGIST

COMPUTER NETWORKS
TECHNOLOGIST

COMPUTER OPERATORS
SUPERVISOR

COMPUTER TAPE LIBRARIAN

DATA CENTRE OPERATOR

INTERNET WEB SITE
TECHNICIAN

LAN (LOCAL AREA
NETWORK) ADMINISTRATOR

LAN (LOCAL AREA
NETWORK) TECHNICIAN

NETWORK ADMINISTRATOR

NETWORK OPERATOR

NETWORK SUPPORT
TECHNICIAN

SYSTEM ADMINISTRATOR

WEB TECHNICIAN

Information Technology

Computer and network operators establish, operate, maintain, and co-ordinate the use of local and wide area networks (LANs and WANs), mainframe networks, hardware, software and related computer equipment. Web technicians set up and maintain internet and intranet web sites and web server hardware and software, and monitor and optimize network connectivity and performance. They are employed in information technology units throughout the private and public sectors. Supervisors of computer and network operators and web technicians are included in this group.

On the Job...

Things that computer and network operators and web technicians do at work are:

- ✓ Maintain, troubleshoot and administer the use of local area networks (LANs), wide area networks (WANs), mainframe networks and computer workstations and peripheral equipment
- ✓ Evaluate and install computer hardware, networking software and operating system software
- ✓ Operate master consoles to monitor the performance of computer systems and networks and to co-ordinate access and use of computer networks
- ✓ Load computer tapes and disks and install software hardware
- ✓ Provide problem-solving services to network users
- ✓ Implement data, software and hardware security procedures
- ✓ Perform routine network start up and close down and maintain control records
- ✓ Perform data backups and disaster recovery operations.
- ✓ Set up local area networks and connections to the internet
- ✓ Implement network traffic and security monitoring software, and optimize server performance
- ✓ Modify web pages, applets and scripts
- ✓ Respond to requests for help and information from web site visitors and web site designers

Educational Requirements:

- ✓ Completion of a college or other program in computer science, network administration, web technology or in a related field is usually required.
- ✓ Certification or training provided by software vendors may be required by some employers.



- AERONAUTICAL TECHNOLOGIST
- HEATING DESIGNER
HVAC (HEATING, VENTILATING AND AIR CONDITIONING) TECHNOLOGIST
- MACHINE DESIGNER
- MARINE ENGINEERING TECHNOLOGIST
- MECHANICAL ENGINEERING TECHNICIAN
- MECHANICAL ENGINEERING TECHNOLOGIST
- MECHANICAL TECHNOLOGIST
- MOULD DESIGNER
- THERMAL STATION TECHNICIAN
- TOOL AND DIE DESIGNER
- TOOL DESIGNER
- ENGINEERING DESIGN AND DRAFTING TECHNOLOGIST
- MANUFACTURING ENGINEERING TECHNOLOGIST
- POWER ENGINEERING TECHNOLOGIST

Mechanical

Mechanical engineering technicians and technologists work in mechanical engineering fields such as the design, development, maintenance and testing of machines, components, tools, heating and ventilating systems, power generation and power conversion plants, manufacturing plants and equipment. They are employed by consulting engineering, manufacturing and processing companies, institutions and government departments.

On the Job...

Things that mechanical engineering technicians and technologists do at work are

- ✓ Prepare and interpret conventional and computer-assisted design (CAD) engineering designs, drawings, and specifications for machines and components, power transmission systems, process piping, heating, ventilating and air-conditioning systems
- ✓ Prepare cost and material estimates, project schedules and reports
- ✓ Conduct tests and analyses of machines, components and materials to determine their performance, strength, response to stress and other characteristics
- ✓ Design moulds, tools, dies, jigs and fixtures for use in manufacturing processes
- ✓ Inspect mechanical installations and construction
- ✓ Prepare contract and tender documents
- ✓ Supervise, monitor and inspect mechanical installations and construction projects
- ✓ Prepare standards and schedules and supervise mechanical maintenance programs or operations of mechanical plants.

Educational Requirements:

- ✓ Completion of a two- or three-year college program in mechanical engineering technology is usually required.
- ✓ Certification in mechanical engineering technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required for some positions.
- ✓ A period of supervised work experience, usually two years, is required before certification.



Mineral Resources

Geological and mineral technicians and technologists work in the fields of oil and gas exploration and production, geophysics, petroleum engineering, geology, mining and mining engineering, mineralogy, extractive and physical metallurgy, metallurgical engineering and environmental protection. They are employed by petroleum and mining companies, consulting geology and engineering firms, and by governments and educational institutions as well as by a variety of manufacturing, construction and utilities companies.

GEOLOGICAL TECHNICIAN

GEOPHYSICAL
TECHNOLOGIST

GROUNDWATER
TECHNOLOGIST

MARINE GEOSCIENCE
TECHNOLOGIST

METALLURGICAL
TECHNOLOGIST

MINERALOGY TECHNICIAN
MINING ENGINEERING
TECHNOLOGIST

MINING TECHNOLOGIST

PETROLEUM ENGINEERING
TECHNOLOGIST

PETROLEUM TECHNICIAN

PETROLOGY TECHNICIAN

RESERVOIR ENGINEERING
TECHNICIAN

ROCK MECHANICS
TECHNICIAN

SEISMIC TECHNICIAN

WELDING TECHNOLOGIST

On the Job...

Things that geological and mineral technicians and technologists do at work are:

- ✓ Conduct or direct geological, geophysical, geochemical, hydrographic or oceanographic surveys, prospecting field trips, exploratory drilling, well logging or underground mine survey programs
- ✓ Operate and maintain geophysical survey and well logging instruments and equipment
- ✓ Prepare notes, sketches, geological maps and cross sections
- ✓ Prepare, transcribe or analyze seismic, gravimetric, well log or other geophysical and survey data
- ✓ Assist engineers and geologists in the evaluation and analysis of petroleum and mineral reservoirs
- ✓ Prepare or supervise the preparation of rock, mineral or metal samples and perform physical and chemical laboratory tests
- ✓ Conduct or assist in environmental audits, in the design of measures to minimize undesirable environmental effects of new or expanded mining and oil and gas operations, and in the development of waste management and other related environmental protection procedures
- ✓ Supervise oil and gas well drilling, well completions and work-overs
- ✓ Supervise studies and programs related to mine development, mining methods, mine ventilation, lighting, drainage and ground control

Educational Requirements:

- ✓ Geological and mineral technologists usually require completion of a two- to three-year college program in geological technology, petroleum technology, petroleum engineering technology, hydrogeology or groundwater technology, mining technology, mining engineering technology, mineralogy, metallurgical technology, or welding technology. Geophysics technologists usually require completion of a two- to three-year college program in electronics technology. Geological and mineral technicians usually require completion of a one- to two-year college program in a related field.



Petroleum / Geosciences

Petroleum Engineering technicians and technologists work in the oil and gas industry. They operate and maintain well logging instruments and equipment, and assist or supervise exploratory drilling or well logging surveys. In addition, many Petroleum Technicians and Technologists prepare geological maps and manage facilities

PETROLEUM TECHNOLOGIST

PETROLEUM TECHNICIAN

MINING TECHNOLOGIST

GEOPHYSICAL
TECHNOLOGIST

GEOLOGICAL
TECHNOLOGIST

GEOPHYSICAL
TECHNOLOGIST

EXTRACTIVE METALURGY
TECHNOLOGIST

WELL SITE TECHNOLOGIST

MARINE GEOSCIENCE
TECHNOLOGIST

MINERAL TECHNOLOGIST

CORROSION TECHNOLOGIST

RESERVOIR TECHNOLOGIST

On the Job...

Things that petroleum technicians and technologists do at work are:

- ✓ Assist in feasibility studies for developing new oil and gas fields
- ✓ Monitor oil and gas drilling operations
- ✓ Select sites and specify drilling locations, testing and equipment
- ✓ Direct and monitor the completion and evaluation of wells, well testing and well surveys
- ✓ Monitor and supervise well oil and gas recovery
- ✓ Analyze reservoir fluid data to design optimum recovery methods and to predict reservoir performance and reserves
- ✓ Monitor and forecast oil recovery techniques that extend the economic life of wells
- ✓ Track the actual volume and value of reserves as they are used up and replaced by new exploration and development
- ✓ Supervise equipment and train crews on the use of heavy machinery used in oil mining
- ✓ Supervise the preparation, harvesting and transporting of oil and oil sand
- ✓ Analyze samples collected from drilling cores

Educational Requirements:

- ✓ Petroleum Technicians and Technologists usually require completion of a two-year college program in Petroleum Technology
- ✓ Certification is available through provincial associations of engineering/applied science technologists and technicians and may be required for some positions.