Working Towards the Future

HIGH PRIORITY OCCUPATIONS
RENFREW & LANARK COUNTIES
2012

ENVIRONMENTAL TECHNICIAN
SMALL ENGINE REPAIR
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Thank you to all those who contributed their time and energy to making this project a success and to all of the employers who participated in our consultation process. We couldn’t have done it without you!

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Welcome to Working Towards the Future: High Priority Occupations in Renfrew & Lanark Counties!

High Priority Occupations (HPOs) are in demand by employers, have higher skill needs and can provide family sustaining wages. Within the pages of the Working Towards the Future Handbook we profile selected HPOs in Business, Finance and Administration, Education & Community Social Services, Health & Wellness, Science, Technology, Engineering & Mathematics (STEM), Manufacturing, Skilled Trades, Construction & Labourers, and Emerging & Other sectors that have been identified through research, surveys and consultations with local employers.

Use the profiles that interest you to learn about the type of work, related occupations, education and training requirements, earnings, job outlook, and work environment.

The Handbook is supplemented by a Website that presents more detailed profiles, photos, videos and a variety of other interactive content highlighting these local in-demand careers. It also includes links to additional resources on Career Planning and Labour Market Information.

We hope that you find this resource useful and we look forward to continuing to provide you with up-to-date, local labour market information and resources for years to come.

Sincerely,

The Labour Market Group of Renfrew & Lanark

www.renfrewlanarkcareers.com
The Labour Market Group of Renfrew & Lanark is a satellite office of the 1000 Islands Regions Workforce Development Board, one of 21 Workforce Planning Boards across Ontario responsible for identifying and responding to diverse regional and local labour market needs across the province.

Our Mission is to work collaboratively with community partners on the creation of innovative labour market solutions that meet local workforce development needs. Our vision is to ensure the development of a skilled workforce contributing to a prosperous Ontario.

In developing a competitive, skilled and adaptable workforce, you must strive to have a readily available supply of workers with the appropriate skills and education to meet the current and future needs of industry. In the Province of Ontario, the Ministry of Finance projects the shortfall in the availability of workers to reach an estimated high of 1.8 million by 2031, depending on our level of population growth. Without effective action at the local, provincial and national levels, we will face a future with a large number of workers looking for jobs that require skills they do not possess and a large number of jobs that go unfilled as a result.

For several years we have identified a need for current and reliable information on projected local employment opportunities. This information would allow students, job seekers and other community stakeholders to make informed decisions pertaining to education, training and career paths and help match local supply with local demand.

In September 2011, the 1000 Islands Region Workforce Development Board and the Labour Market Group of Renfrew and Lanark were finally able to undertake an initiative to gather this information. With funding secured from Service Canada under its Youth Awareness Program, a key partnership with the Skills Link program to assist with the survey process, and the support of a community steering committee, we were well equipped to accomplish the task.
EXECUTIVE SUMMARY

The focus of this project was to identify projected employment in the skilled trades and other skilled occupations in the local community using research, surveys and employer consultations and to facilitate a campaign to inform youth and other stakeholders of these employment projections.

Over a period of 35 weeks, staff was hired, a Steering Committee gathered, and a work plan created. Data from the 2006 Census was analyzed to determine the occupations to be targeted for surveying, which represented over 80% of the employed labour force in skilled occupations. Significant industries that employed these occupations were then chosen to be surveyed.

An electronic survey was created using Fluid Surveys and adhering to proper survey methodologies. A Skills Link participant was hired and trained to conduct surveys and employers were then contacted over a period of 10 weeks.

Over 2000 employers were contacted, with a full participation rate of approximately 20%. The survey results were then compiled, analyzed and interpreted. Additional research and consultations were conducted to support specific areas where survey information was insufficient or inconclusive.

The Working Towards the Future Handbook and Website were then prepared to share the findings of this project. A brochure and video highlighting interesting facts on High Priority Occupations in Renfrew and Lanark Counties were also prepared. Finally, two Youth Conferences and two public awareness sessions were held to present the results of the project to area youth, community organizations and other stakeholders.

The process was challenging, but we are proud of the accomplishments of this endeavour. We hope that it will prove to be a catalyst for positive change to labour market conditions at the community level.
RENFREW LANARK HIGH
PRIORITY OCCUPATIONS

BUSINESS, FINANCE & ADMINISTRATION
Accounting and Related Clerks
Administrative Assistants
Financial and Investment Analysts
Human Resources Professionals
Purchasing Agents and Officers

STEM (SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS)
Chemical Engineers
Chemical Technologists and Technicians
Chemists
Computer Engineers
Computer Programmers and Interactive Media Developers
Drafting Technologists and Technicians
Industrial Engineering and Manufacturing Technologists and Technicians
Information Systems Analysts and Consultants
Mechanical Engineering Technologists and Technicians
Mechanical Engineers
Metallurgical and Materials Engineers
Other Professional Engineers
Physicists

HEALTH & WELLNESS
Allied Primary Health Practitioners
Cooks
Dental Hygienists and Dental Therapists
Dentists
Dietitians and Nutritionists
General Practitioners and Family Physicians
Licensed Practical Nurses
Pharmacists
Registered Nurses and Registered Psychiatric Nurses

EDUCATION & COMMUNITY SOCIAL SERVICES
Early Childhood Educators and Assistants
Family, Marriage and Other Related Counsellors
Home & Personal Support Workers
Social and Community Service Workers
Social Workers
MANUFACTURING, SKILLED TRADES, CONSTRUCTION & LABOURERS
Automotive Service Technicians
Carpenters
Crane Operators
Electrical Power Line and Cable Workers
Electricians
Heavy Equipment Operators
Industrial Electricians
Insulators
Landscape and Horticulture Technicians and Specialists
Landscaping and Grounds Maintenance Labourers
Machining Tool Operators
Machinists and Machining and Tooling Inspectors
Mechanical Assemblers and Inspectors
Motor Vehicle Body Repairers
Motorcycle, All-Terrain Vehicle and Other Related Mechanics
Other Repairers and Servicers
Other Trades Helpers and Labourers
Plumbers
Power Engineers and Power Systems Operators
Sheet Metal Workers
Tool and Die Makers
Welders and Related Machine Operators

EMERGING OCCUPATIONS
Civil/Environmental Engineering Technologists and Technicians
Civil/Environmental Engineers
Electrical and Electronics Engineers
Residential and Commercial Installers and Servicers
Technical Sales Specialists

OTHER
Ammunition Technician
Water, Fuels and Environmental Technician
BUSINESS, FINANCE & ADMINISTRATION

Occupations in this category are found across every industry and often provide the backbone of success for any type of business or organization. They account for approximately 14% of the employed labour force in Renfrew & Lanark Counties and are consistently in some demand.
ACCOUNTING AND RELATED CLERKS

Accounting and related clerks calculate, prepare and process bills, invoices, accounts payable and receivable, budgets and other financial records according to established procedures.

EXAMPLE TITLES
Accounting clerk
Accounts payable clerk
Accounts receivable clerk
Audit clerk
Billing clerk
Budget clerk
Costing clerk
Deposit clerk
Finance clerk
Freight-rate clerk
Income tax return preparer
Invoice clerk
Ledger clerk
Tax clerk
EMPLOYMENT REQUIREMENTS
Completion of secondary school is usually required. Completion of college or other courses certified by the Certified General Accountants Association of Canada, Canadian Securities Institute or Canadian Bookkeepers Association may be required. Some accounting clerks must be bondable.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Accounting Technology / Bookkeeping
Accounting (Certificate/Diploma, Undergraduate, Post-Graduate)
Commerce / Business Administration (Certificate/Diploma, Undergraduate)
Financial Services
Office Administration

WORKPLACE
Work in all types of businesses and organizations throughout the private and public sectors including large companies, law firms, restaurants, motor vehicle repair shops, and retail stores.
Administrative assistants:
Administrative assistants perform a variety of administrative duties in support of managerial and professional employers.

Legal administrative assistants:
Legal administrative assistants perform a variety of secretarial and administrative duties in law offices, legal departments of large firms, real estate companies, land title offices, municipal, provincial and federal courts and government.

Medical administrative assistants:
Medical administrative assistants perform a variety of secretarial and administrative duties in doctor’s offices, hospitals, medical clinics and other medical settings.

EXAMPLE TITLES
Administrative assistant
Administrative assistant – legal
Administrative assistant – medical
Office administrative assistant
Executive secretary
Private secretary
Technical secretary
Legal secretary
Litigation secretary
Legal assistant
Corporate law legal assistant
Legal assistant – criminal law
Litigation legal assistant
Real estate secretary
Medical secretary
Ward secretary
EMPLOYMENT REQUIREMENTS
Completion of secondary school is usually required. Completion of a one- or two-year college or other program for administrative assistants, secretaries, legal secretaries and medical secretaries, other specialized courses for secretaries or previous clerical experience is required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Office Administration
Office Administration - Executive
Office Information and Business Technology
Payroll Administration
Legal Administrative Assistant
Legal Assistant / Paralegal
Medical Office Administration
Health Information Services
Dental Office Administration
Veterinary Office Administration

WORKPLACE
Work in offices throughout the private and public sectors where they interact with other staff members, clients, and sometimes the public. Employers include businesses of all types and sizes, law firms, government agencies, courts, and corporations with legal departments, hospitals, clinics, doctors’ offices, nursing homes, chiropractic offices, physician groups, and private health companies.

NOC 1241, 1242, 1243
Financial and investment analysts collect and analyze financial information such as economic forecasts, trading volumes and the movement of capital, financial backgrounds of companies, historical performances and future trends of stocks, bonds and other investment instruments to provide financial and investment or financing advice for their company or their company's clients. Their studies and evaluations cover areas such as takeover bids, private placements, mergers or acquisitions.

EXAMPLE TITLES
Chartered financial analyst
Financial analyst
Investment analyst
Money market analyst
Portfolio manager
Research associate, financial services
EMPLOYMENT REQUIREMENTS
A bachelor’s degree in commerce, business administration or economics and on-the-job training and industry courses and programs are usually required.
A master’s degree in business administration (MBA) (concentration in finance) or in finance may be required.
The Chartered Financial Analyst (CFA) designation, available through a program conducted by the Institute of Chartered Financial Analysts, may be required by some employers.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Economics, General
Finance (Undergraduate/Post-Graduate)
Accounting (Undergraduate/Post-Graduate)
Commerce / Business Administration (Undergraduate/Post-Graduate)

WORKPLACE
Work for banks, trust companies, life insurance companies, investment firms, financial planning organizations, accounting firms and other organizations.
Human resources professionals develop, implement and evaluate human resources and labour relations policies, programs and procedures and advise managers and employers on human resources matters.

EXAMPLE TITLES
- Human resources specialist
- Business agent, labour organization
- Classification officer – human resources
- Classification specialist
- Compensation research analyst
- Conciliator
- Consultant, human resources
- Employee relations officer
- Employment equity officer
- Human resources research officer
- Job analyst
- Labour relations officer
- Mediator
- Union representative
- Wage analyst
EMPLOYMENT REQUIREMENTS
A university degree or college diploma in human resources management or a related field, such as business administration, industrial relations, commerce or psychology or completion of a professional development program in human resources administration is required. Some employers may require human resources professionals to hold a Certified Human Resources Professional (CHRP) designation.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Human Resources Management (Certificate / Diploma, Undergraduate, Post-Graduate)
Payroll Administration
Labour and Industrial Relations
Labour Studies
Corporate Communications

WORKPLACE
Human resources professionals are employed throughout the private and public sectors. Employers include governments, accounting firms, hospitals, banks, department stores, and other businesses and organizations. Some may be self-employed.
Purchasing agents and officers purchase general and specialized equipment, materials, land or access rights and business services for use or for further processing by their establishment.

**EXAMPLE TITLES**
- Contract management officer
- Contracts officer
- Energy asset surface land analyst
- Materiel management officer
- Procurement officer
- Purchaser, furniture and furnishings
- Purchasing agent
- Supply officer, government
EMPLOYMENT REQUIREMENTS
A bachelor’s degree or college diploma in business administration, commerce or economics is usually required. Purchasing agents and officers purchasing specialized materials or business services may require a related university degree or college diploma. For example, a bachelor’s degree or college diploma in engineering may be required for purchasers of industrial products. A certificate in purchasing from the Purchasing Management Association of Canada (PMAC) may be required. Previous experience as a purchasing clerk or as an administrative clerk may be required. Certification from the International Right of Way Association (IRWA) may be required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Purchasing
Logistics, Materials, and Supply Chain Management
Traffic, Customs and Transportation
Production and Inventory Management
Commerce / Business Administration (Undergraduate/Certificate/Diploma)
Economics, General

WORKPLACE
They are employed throughout the public and private sectors. Employers include manufacturers, school boards, colleges and universities, hospitals, and government departments.
STEM
(SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS)

This category combines scientific and mathematical occupations requiring a very high level of education and training. Occupations in STEM are considered high priority across Manufacturing, Research & Development, Technology and some Construction establishments. Demand in this category is fairly consistent but may fluctuate with global economic stability.
Chemical engineers research, design, and develop chemical processes and equipment, oversee the operation and maintenance of industrial chemical, plastics, pharmaceutical, resource, pulp and paper, and food processing plants and perform duties related to chemical quality control, environmental protection and biochemical or biotechnical engineering.

**EXAMPLE TITLES**
- Adhesives engineer
- Biochemical engineer
- Biotechnical engineer
- Chemical engineer, environmental
- Chemical process engineer
- Industrial hygiene engineer
- Industrial waste treatment engineer
- Liquid fuels engineer
- Petrochemical engineer
- Polymer engineer
- Process control engineer, chemical
- Project engineer, chemical
- Pulp and paper engineer
- Refinery engineer
- Waste treatment engineer
EMPLOYMENT REQUIREMENTS
A bachelor’s degree in chemical engineering or in a related engineering discipline is required. A master’s degree or doctorate in a related engineering discipline may be required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Chemical Engineering
Materials Science / Engineering
Chemistry
Chemical Engineering Technology

WORKPLACE
Chemical engineers are employed in a wide range of manufacturing and processing industries, consulting firms, government, research and educational institutions. Chemical engineers work closely with chemists and other scientists and engineers. Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.
Chemical technologists and technicians provide technical support and services or may work independently in chemical engineering, chemical and biochemical research and analysis, industrial chemistry, chemical quality control and environmental protection.

**EXAMPLE TITLES**
- Analytical technician, chemical
- Biochemistry technologist
- Chemical analyst
- Chemical engineering technician
- Chemical engineering technologist
- Chemical research technician
- Food technologist
- Geochemical technician
- Industrial hygiene technologist
- Mass spectrometer technician
- Master dyer – textiles
- Paint technician
- Quality control technician

**EMPLOYMENT 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.
Certification in chemical engineering technology or in a related field is available through provincial associations of engineering/applied science technologists and technicians and may be required by employers.
National certification for chemical technologists and technicians is available through the Canadian Society for Chemical Technology.
A period of supervised work experience, usually two years, is required before certification.
RELATED COLLEGE & UNIVERSITY PROGRAMS
Chemical Engineering Technology
Chemical Engineering
Materials Science / Engineering

WORKPLACE
Chemical technologists and technicians are employed by research and development and quality control laboratories, consulting engineering companies, chemical, petrochemical and petroleum processing companies, pharmaceutical and drug companies, food processing companies, environmental consulting firms and a variety of other manufacturing and processing industries, and by utilities, health, educational and government establishments.

Some chemical technologists and technicians working in support of fundamental research in chemistry or biochemistry are university graduates.
Chemists conduct research and analysis in support of industrial operations, product and process development, quality control, environmental control, medical diagnosis and treatment, biotechnology, nanotechnology and other applications. They also conduct theoretical, experimental and applied research into basic chemical and biochemical processes to create or synthesize new products and processes.

**EXAMPLE TITLES**

Agricultural chemist  
Biochemist  
Clinical chemist  
Coatings chemist  
Electrochemist  
Environmental chemist  
Food chemist  
Medicinal chemist

Nuclear magnetic resonance (nmr) spectroscopist  
Pharmacological chemist  
Physical chemist  
Polymer chemist  
Quality control chemist  
Research chemist  
Soil chemist
EMPLOYMENT REQUIREMENTS
A bachelor’s degree in chemistry, biochemistry or a related discipline is required.
A master’s or doctoral degree is usually required for employment as a research chemist.
Licensing by a provincial association of chemists is required in Quebec, and available but voluntary in Nova Scotia, Ontario, Alberta and British Columbia.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Chemistry
Chemical Engineering
Chemical Engineering Technology
Chemical Physics
Environmental Chemistry

WORKPLACE
Chemists are employed in research, development and quality control laboratories; chemical, petrochemical and pharmaceutical industries; mineral, metal and pulp and paper industries; and a wide variety of manufacturing, utility, health, educational and government establishments.
COMPUTER ENGINEERS
(except software engineers and designers)

Computer engineers (except software engineers and designers) research, plan, design, develop, modify, evaluate and integrate computer and telecommunications hardware and related equipment, and information and communication system networks including mainframe systems, local and wide area networks, fibre-optic networks, wireless communication networks, intranets, the Internet and other data communications systems.

EXAMPLE TITLES

- Computer hardware engineer
- Fibre-optic network designer
- Hardware circuit board designer
- Hardware development engineer
- Hardware technical architect
- Network test engineer
- Systems designer – hardware
- Telecommunications hardware engineer
- Wireless communications network engineer

earnings

demand
EMPLOYMENT REQUIREMENTS
Computer engineers require a bachelor’s degree in computer engineering, electrical or electronics engineering, engineering physics or computer science. A master’s or doctoral degree in a related engineering discipline may be required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Computer Engineering
Electrical / Electronics Engineering
Computer Science

WORKPLACE
Computer Engineers are employed by computer and telecommunication hardware manufacturers, by engineering, manufacturing and telecommunications firms, in information technology consulting firms, by governmental, educational and research institutions and in information technology units throughout the private and public sectors. Some work as self-employed consultants.
Computer programmers write, modify, integrate and test computer code for microcomputer and mainframe software applications, data processing applications, operating systems-level software and communications software. Interactive media developers write, modify, integrate and test computer code for Internet applications, computer-based training software, computer games, film, video and other interactive media.

EXAMPLE TITLES

Application programmer
Computer game developer
Computer programmer
E-business (electronic business) software developer
Interactive media developer
Mobile application developer
Multimedia developer

Operating systems programmer
Programmer analyst
Scientific programmer
Software developer
Software programmer
Systems programmer
Web programmer
EMPLOYMENT REQUIREMENTS
A bachelor’s degree in computer science or in another discipline with a significant programming component or completion of a college program in computer science is usually required. Specialization in programming for engineering and scientific applications requires specific post-secondary study or experience.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Computer Programming
Computer Science
Software Engineering
Computer Engineering
Computer Systems Analysis / Business Analysis
Computer Systems Technology
Management Information Systems

WORKPLACE
Computer programmers and interactive media developers are employed in computer software development firms, information technology consulting firms, and in information technology units throughout the private and public sectors. They may also work for governments or as independent consultants.

NOC 2174
Drafting technologists and technicians prepare engineering designs, drawings and related technical information, in multidisciplinary engineering teams or in support of engineers, architects or industrial designers, or they may work independently.

**EXAMPLE TITLES**
- Architectural draftsperson
- Computer-assisted design and drafting technologist
- Computer-assisted drafting (CAD) technician
- Design and drafting technologist
- Draftsperson
- Electrical draftsperson
- Electronic draftsperson
- Engineering design and drafting technologist
- Mechanical draftsperson
- Steel detailer – drafting
- Structural draftsperson
EMPLOYMENT REQUIREMENTS
Completion of a two- to three-year college program in engineering design and drafting technology or in a related field is usually required for drafting and design technologists. Completion of a one- to two-year college program in drafting or completion of a three- to four-year apprenticeship program or four to five years of related experience plus completion of college or industry courses in drafting are usually required for drafting technicians.
Certification in engineering design and drafting technology or in a related field through provincial associations of engineering/applied science technologists and technicians may be required by employers. A period of supervised work experience, usually two years, is required before certification.

APPRENTICESHIP
Draftspersons may complete an apprenticeship of 7,400 hours of on-the-job experience and 600 hours in-school training. Trade certification for draftspersons is available, but voluntary in Ontario.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Drafting and Design Technology
CAD Drafting and Design Technology
Architectural Drafting / Architectural CAD
Civil Drafting / Civil CAD
Mechanical Drafting / Mechanical CAD

WORKPLACE
Drafting technologists and technicians are employed by engineering and architectural firms, consulting and construction companies, utility, resource and manufacturing companies, all levels of government and by a wide range of other establishments.

NOC 2253
Industrial engineering and manufacturing technologists and technicians may work independently or provide technical support and services in the development of production methods, facilities and systems, and the planning, estimating, measuring and scheduling of work.

**EXAMPLE TITLES**
- CAD/CAM programmer
- Loss prevention technologist – manufacturing
- Planning technician
- Plastics manufacturing technician
- Pulp and paper manufacturing technologist
- Quality assurance technologist
- Scheduling technician – manufacturing
- Textile technologist
- Time study analyst
EMPLOYMENT 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 a related discipline is usually required for industrial engineering or manufacturing technologists.
Completion of a one- or two-year college program in industrial engineering technology or in a related discipline is usually required for industrial engineering or manufacturing technicians.
Certification in industrial engineering or manufacturing technology or in a related field is available through provincial or territorial 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.
A college diploma in manufacturing technology and/or trade certification and experience in machining and tooling or metalworking is required for CAD-CAM/CNC programmers.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Industrial Engineering Technology
Manufacturing Technology
Industrial Engineering

WORKPLACE
Industrial engineering and manufacturing technologists and technicians are employed by manufacturing, transportation and insurance companies, consulting and industrial firms, government departments, and establishments in other industries.
Information systems analysts and consultants analyze systems requirements, develop and implement information systems development plans, policies and procedures, and provide advice on a wide range of information systems issues.

EXAMPLE TITLES
IT (information technology) consultant
Computer systems analyst
Informatics consultant
Informatics security analyst
Information systems business analyst
Information systems quality assurance analyst
Management information systems (MIS) analyst
Systems auditor
Systems consultant
Systems security analyst
EMPLOYMENT REQUIREMENTS
A bachelor’s degree in computer science, computer systems engineering, software engineering, business administration or a related discipline or completion of a college program in computer science is usually required. Experience as a computer programmer is usually required. Certification or training provided by software vendors may be required by some employers.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Computer Systems Analysis / Business Analysis
Computer Science
Computer Programming
Economics, General
Management Information Systems
Operations Management
Operations Research
Systems Science and Engineering

WORKPLACE
Information systems analysts and consultants are employed in information technology consulting firms and in information technology units throughout the private and public sectors. Employers include hardware and software developers, manufacturers, retailers, IT companies, government agencies, and insurance companies or they may be self-employed.
Mechanical engineering technologists and technicians provide technical support and services or may work independently 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.

EXAMPLE TITLES
- HVAC (heating, ventilation and air conditioning) technologist
- Aeronautical technologist
- Heating designer
- Machine designer
- Marine engineering technologist
- Mechanical technologist
- Mould designer
- Thermal station technician
- Tool and die designer
- Tool designer
EMPLOYMENT REQUIREMENTS
Completion of a two- or three-year college program in mechanical engineering technology is usually required for mechanical engineering technologists. Completion of a one- or two-year college program in mechanical engineering technology is usually required for mechanical engineering technicians. 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.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Mechanical Engineering Technology
Mechanical Drafting / Mechanical CAD
Industrial Engineering Technology
Manufacturing Technology

WORKPLACE
Mechanical engineering technologists and technicians are employed by consulting engineering firms, manufacturing and processing companies, construction companies, and industrial businesses, as well as institutions and government departments.
Mechanical engineers research, design and develop machinery and systems for heating, ventilating and air conditioning, power generation, transportation, processing and manufacturing. They also perform duties related to the evaluation, installation, operation and maintenance of mechanical systems.

**EXAMPLE TITLES**

- Design engineer – mechanical
- Energy conservation engineer
- Engineer, power generation
- Fluid mechanics engineer
- Heating, ventilation and air conditioning (hvac) engineer
- Mechanical maintenance engineer
- Nuclear engineer
- Piping engineer
- Refrigeration engineer
- Robotics engineer
- Thermal design engineer
- Tool engineer
EMPLOYMENT REQUIREMENTS
A bachelor’s degree in mechanical engineering or in a related engineering discipline is required.
A master’s degree or doctorate in a related engineering discipline may be required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Mechanical Engineering
Aerospace Engineering
Mathematics
Physics
Mechanical Engineering Technology

WORKPLACE
Most mechanical engineers work in the manufacturing industry, the utilities industry, or for architectural companies or government agencies. They are employed by consulting firms, by power-generating utilities and in a wide range of processing and transportation firms or they may be self-employed, working as independent consultants. Mechanical engineers work closely with civil, electrical, aerospace, chemical, industrial and other engineers. Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.

N.B. Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.). Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.

NOC 2132
Metallurgical and materials engineers conduct studies of the properties and characteristics of metals and other non-metallic materials and plan, design and develop machinery and processes to concentrate, extract, refine and process metals, alloys and other materials such as ceramics, semiconductors and composite materials. Metallurgical engineers research and develop new alloys and systems for extracting metal from ores; materials engineers research and develop new non-metallic materials with physical characteristics to meet specific requirements.

**EXAMPLE TITLES**
- Ceramics engineer
- Corrosion engineer
- Electrometallurgical engineer
- Foundry engineer
- Hydrometallurgical engineer
- Materials engineer
- Metallurgical engineer
- Physical metallurgical engineer
- Pyrometallurgical engineer
- Welding engineer
EMPLOYMENT REQUIREMENTS
A bachelor’s degree in metallurgical, materials, ceramic or chemical engineering or in a related engineering discipline is required.
A master’s degree or doctorate in a related engineering discipline may be required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Materials Science / Engineering
Metallurgical Engineering
Chemical Engineering
Mining / Mineral Engineering

WORKPLACE
Metallurgical and materials engineers are employed in consulting engineering firms, mining, metal processing and manufacturing companies, and in government, research and educational institutions. Many work for companies in the electronics, aerospace, transportation, energy, biomedical, automotive, and metal production industries.
OTHER PROFESSIONAL ENGINEERS, N.E.C.

This group includes agricultural and bio-resource engineers, biomedical engineers, engineering physicists and engineering scientists, marine and naval engineers, textile engineers and other specialized engineering occupations which are not classified elsewhere.

EXAMPLE TITLES
- Agricultural engineer
- Bio-resource engineer
- Biomedical engineer
- Engineering physicist
- Engineering scientist
- Food processing engineer
- Marine engineer
- Naval architect
- Textile engineer
EMPLOYMENT REQUIREMENTS
A bachelor’s degree in an appropriate engineering discipline is required.
A master’s degree or doctorate in a related engineering discipline may be required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Agricultural / Biological Engineering
Chemical Engineering
Civil Engineering
Environmental Engineering
Agriculture, General

WORKPLACE
Other Engineers may work for companies involved in food processing, biotechnology, agricultural equipment and feed and fertilizer manufacturing. Many work as consultants, hiring out their services to clients, while others work for universities and colleges or government agencies. Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.
Physicists conduct theoretical and applied research to extend knowledge of natural phenomena and to develop new processes and devices in fields such as electronics, communications, power generation and distribution, aerodynamics, optics and lasers, remote sensing, biotechnology, medicine and health.

**EXAMPLE TITLES**
- Acoustics physicist
- Aerodynamicist
- Biophysicist
- Health physicist
- Medical physicist
- Nuclear physicist
- Plasma physicist
- Research scientist, aerospace
- Research scientist, electronics
- Research scientist, physics
- Research scientist, remote sensing
- Solid-state physicist
EMPLOYMENT REQUIREMENTS
Physicists usually require a master’s or doctoral degree in a field of physics, engineering physics, or in a related discipline. Mobility between specializations within physics is possible to the fields of meteorology, geophysics and other fields of science with experience.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Physics
Atomic / Nuclear Physics
Astrophysics
Chemical Physics
Geophysics
Engineering Physics

WORKPLACE
Physicists are employed by electronic, electrical and aerospace manufacturing companies, telecommunications companies, power utilities, research laboratories, hospitals and by a wide range of other processing, manufacturing, and research and consulting firms in the nuclear, medical, computer, and similar industries, as well as by universities, colleges, high schools, and governments. Physicists may work closely with and perform some of the duties of engineers.
The Health Care and Wellness sector is one of the fastest growing in Renfrew and Lanark Counties. With the average age of the local population increasing steadily, demand on the health care system is constant. The industry is also continually adapting to improve its range of services and quality of care which creates increased demand for skilled workers.
ALLIED PRIMARY HEALTH PRACTITIONERS

This group includes nurse practitioners, physician assistants and midwives who provide primary health care and treatment in conjunction with physicians and in collaboration with other health professionals. Nurse practitioners and physician assistants provide a range of health services to patients delivering preventive and continuous care toward the management of patients’ health. Midwives provide full-course care to women and their babies during the pre- and post-natal period.

EXAMPLE TITLES
Anesthesia assistant
Midwife
Nurse practitioner
Nurse practitioner – extended class
Physician assistant
EMPLOYMENT REQUIREMENTS
Nurse practitioners usually require a master’s degree in nursing; or completion of a nursing program with additional advanced or extended primary health care nursing education; and several years of practice as a registered nurse. Registration with a regulatory body is required for nurse practitioners in all provinces and territories. Physician assistants require completion of a university degree in a physician assistant program. Midwives require completion of an undergraduate university degree program in midwifery or its equivalent and a period of supervised practical training. Registration with a regulatory body is required for midwives in Newfoundland and Labrador, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and the Northwest Territories.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Medicine (MD)
Midwifery
Nurse Practitioner / Primary Care Nursing
Nursing

WORKPLACE
Work in community health centres, hospital outpatient clinics, family practice departments, drop-in centres, assisted living facilities, and other medical settings. Sometimes travel to clients’ homes or may work one-on-one with patients or as part of a team of health care providers.

NOC 3124

earnings
Cooks prepare and cook a wide variety of foods.

**EXAMPLE TITLES**
- Apprentice cook
- Dietary cook
- First cook
- Grill cook
- Hospital cook
- Institutional cook
- Journeyman/woman cook
- Licensed cook
- Line cook
- Second cook
- Short order cook

**EMPLOYMENT REQUIREMENTS**
Completion of secondary school is usually required. Completion of a three-year apprenticeship program for cooks or completion of college or other program in cooking or several years of commercial cooking experience are required.

**APPRENTICESHIP**
You should complete an apprenticeship of 6,000 hours which includes on-the-job training hours as well as 2 -12 week in-school training sessions. You must also successfully write the required examination to be awarded a Certificate of Qualification. Trade certification is available, but voluntary, in all provinces and territories.

**RELATED COLLEGE & UNIVERSITY PROGRAMS**
- Cooking
- Culinary Arts / Chef Training
- Culinary Management
- Hotel / Restaurant Management
**WORKPLACE**

They are employed in restaurants, hotels, hospitals and other health care institutions, central food commissaries, educational institutions and other establishments. Cooks are also employed aboard ships, at construction and logging campsites and by the military.

**NOC 6322**

**HEALTH & WELLNESS**
Dental hygienists provide dental hygiene treatment and information related to the prevention of diseases and disorders of the teeth and mouth. They are employed in dentists’ offices, hospitals, clinics, educational institutions, government agencies and private industry. Dental therapists carry out limited dental services related to the prevention and treatment of diseases and disorders of the teeth and mouth.

EXAMPLE TITLES
Dental hygienist
Dental nurse
Dental therapist
EMPLOYMENT REQUIREMENTS
Dental hygienists are required to complete a college program ranging from one to three years, or other approved program in dental hygiene recognized by the governing board within the province or territory of residence. Dental therapists are required to complete a two- to three-year college diploma or equivalent credentials from an approved dental institution or complete the dental therapy diploma program offered by the First Nations University of Canada in Prince Albert, Saskatchewan. Licensing by the appropriate provincial or territorial regulatory body is required for dental hygienists. Licensure is required for dental therapists in Newfoundland and Labrador, Saskatchewan, the Yukon, the Northwest Territories and Nunavut.

RELATED COLLEGE & UNIVERSITY PROGRAMS
- Dental Hygiene
- Dental Assisting
- Dental Laboratory Technology

WORKPLACE
Most work in dental offices; some work for large organizations like hospitals, the Armed Forces, and dental hygiene schools and universities.

NOC 3222
Dentists diagnose, treat, prevent and control disorders of the teeth and mouth.

EXAMPLE TITLES
Endodontist
Oral and maxillofacial surgeon
Oral pathologist
Oral radiologist
Orthodontist
Pediatric dentist
Periodontist
Prosthodontist
Public health dentist

EMPLOYMENT REQUIREMENTS
One to four years of pre-dentistry university studies or, in Quebec, completion of a college program in sciences and a university degree from a recognized dental program are required.
Licensing by a provincial or territorial regulatory body is required.
Dentists in general practice can move into a specialized practice through advanced training.
Licensing for specializations is required.
Certification by the National Dental Examining Board of Canada entitles dentists or graduates of approved dental programs to practise dentistry in any province in Canada provided requirements set out by the provincial and territorial licensing authorities are met.
RELATED COLLEGE & UNIVERSITY PROGRAMS
Dentistry (DDS)
Advanced Dental Sciences
Oral Biology / Oral Medicine
Oral / Maxillofacial Surgery
Orthodontics
Periodontics

WORKPLACE
Most work for themselves in private practice or they may be employed in hospitals, clinics, public health facilities or universities.

NOC 3113
Dietitians and nutritionists plan, implement and oversee nutrition and food service programs.

**EXAMPLE TITLES**
- Administrative dietitian
- Clinical dietitian
- Community nutritionist
- Consultant dietitian
- Dietitian-nutritionist
- Nutrition specialist
- Public health dietitian
- Public health nutritionist
- Registered dietitian (RD)
- Research dietitian

![Earnings Chart](chart.png)

![Demand Diagram](demand.png)
EMPLOYMENT REQUIREMENTS
Dietitians and nutritionists usually require a bachelor’s or master’s degree in dietetics, nutrition or a related field such as food and nutritional science or biochemistry and a period of supervised practical training. Registration with a regulatory body is required in all provinces for dietitians. Membership in the national association, Dietitians of Canada, may be required for dietitians to practise. Membership with the national association, Dietitians of Canada, and/or a provincial regulatory body is available for nutritionists who have the same education and practical training as dietitians.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Nutrition / Dietetics
Food and Nutrition Management

WORKPLACE
They are employed in a variety of settings including hospitals, home health-care agencies and extended care facilities, community health centres, the food and beverage industry, the pharmaceutical industry, educational institutions, and government and sports organizations, or they may work as private consultants.
General practitioners and family physicians diagnose and treat the diseases, physiological disorders and injuries of patients. They provide primary contact and continuous care toward the management of patients’ health. Residents in training to be general practitioners and family physicians are included in this group.

**EXAMPLE TITLES**
- Family physician
- General practitioner (gp)
- Medical doctor
- Resident, general practice
EMPLOYMENT REQUIREMENTS
A bachelor’s degree or in Quebec, completion of a college program and one year of pre-medicine university studies is usually required.
Graduation from an approved medical school and two to three years of family medicine residency training are required.
Completion of the qualifying examinations of the Medical Council of Canada and licensing by the provincial or territorial licensing authority are required.
General practitioners and family physicians may become specialist physicians with additional training.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Medicine (MD)
Medical Science, General

WORKPLACE
They usually work in private practice, including group or team practices, hospitals and clinics.
Licensed practical nurses provide nursing care usually under the direction of medical practitioners, registered nurses or other health team members. Operating room technicians are included in this group.

EXAMPLE TITLES
Licensed practical nurse (L.P.N.)
Operating room technician
Registered nursing assistant (R.N.A.)
Certified nursing assistant (CNA)
Licensed nursing assistant
Registered practical nurse (R.P.N.)
Surgical nursing assistant
Surgical technician – nursing
EMPLOYMENT REQUIREMENTS
Completion of a vocational, college or other approved program for licensed practical nurses is required. Registration with a regulatory body is required in all provinces and territories. Completion of the Canadian Practical Nurse Registration Examination is required in all provinces and territories except Quebec. Operating room technicians require either additional academic training in operating room techniques or on-the-job training.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Licensed / Registered Practical Nursing
Practical Nurse Refresher

WORKPLACE
They are employed in hospitals, nursing homes, extended care facilities, rehabilitation centres, doctors’ offices, clinics, companies, private homes and community health centres.
Community pharmacists and hospital pharmacists compound and dispense prescribed pharmaceuticals and provide consultative services to both clients and health care providers. Industrial pharmacists participate in the research, development, promotion and manufacture of pharmaceutical products.

**EXAMPLE TITLES**
- Clinical pharmacist
- Community pharmacist
- Hospital pharmacist
- Industrial pharmacist
- Pharmacist
- Retail pharmacist
EMPLOYMENT REQUIREMENTS
A bachelor of science degree in pharmacy is required. Pharmacists also require practical training under the supervision of a pharmacist. Licensure is required in all provinces and territories for community and hospital pharmacists.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Pharmacy
Pharmaceutical Administration and Regulation
Medical / Pharmaceutical Chemistry and Drug Development
Pharmaceutical Care
Pharmacology

WORKPLACE
Pharmacists are employed in retail and hospital pharmacies, or they may be self-employed. Industrial pharmacists are employed in pharmaceutical companies and government departments and agencies.
This group includes registered nurses, registered psychiatric nurses and graduates of a nursing program who are awaiting registration (graduate nurses). They provide direct nursing care to patients, deliver health education programs and provide consultative services regarding issues relevant to the practice of nursing.

**EXAMPLE TITLES**

Clinical nurse  
Community health nurse  
Critical care nurse  
Emergency care nurse  
Intensive care nurse  
Nurse researcher  
Nursing consultant  

Occupational health nurse  
Private duty nurse  
Public health nurse  
Registered nurse (R.N.)  
Registered psychiatric nurse (R.P.N.)
EMPLOYMENT REQUIREMENTS
Completion of a university, college or other approved registered nursing program is required. Additional academic training or experience is required to specialize in a specific area of nursing. A master’s or doctoral degree in nursing is usually required for clinical nurse specialists, clinical nurses, nursing consultants and nursing researchers. Registration with a regulatory body is required in all provinces and territories.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Nursing
Nursing - Post RN
Nursing Refresher
Nursing Administration and Leadership
Pediatric Nursing
Psychiatric and Mental Health Nursing
Community Nursing
Operating Room Nursing
Critical Care Nursing
Emergency Nursing
Gerontological Nursing
Nephrology Nursing
Occupational Health Nursing
Cardiac Nursing
Oncological Nursing

WORKPLACE
Nurses are employed in hospitals, nursing homes, walk-in clinics, rehabilitation centres, prisons, schools, and other medical settings or they may be self employed.
EDUCATION & COMMUNITY SOCIAL SERVICES

Education & Community Social Services profiles high priority occupations that provide essential services to the community through the education and public service sectors. Demand across this category varies depending on the demand for services and saturation of skilled individuals in the labour market.
EARLY CHILDHOOD EDUCATORS AND ASSISTANTS

Early childhood educators plan, organize and implement programs for children between the ages of infancy and 12 years. Early childhood educator assistants provide care for infants and preschool- to school-age children under the guidance of early childhood educators. Early childhood educators and assistants lead children in activities to stimulate and develop their intellectual, physical and emotional growth and ensure their security and well-being. Supervisors of early childhood educators and assistants are included in this group.

EXAMPLE TITLES
Child care worker assistant
Child care worker, daycare
Daycare helper
Daycare supervisor
Daycare teacher
Daycare worker
Early childhood educator (e.c.e.)
Early childhood educator – preschool
Early childhood educator assistant
Early childhood program staff assistant
Preschool helper
Preschool supervisor
EMPLOYMENT REQUIREMENTS

*Early childhood educators:*
Completion of a two- to four-year college program or apprenticeship in early childhood education or a bachelor’s degree in child development is required. Licensing by a provincial or territorial association for early childhood educators (ECE) is usually required.

*Early childhood educator assistants:*
Completion of secondary school and experience in child care is required. Completion of an early childhood education assistant certificate program or post-secondary courses in early childhood education may be required. Licensing by a provincial or territorial association for early childhood educators (ECE) may be required.

RELATED COLLEGE & UNIVERSITY PROGRAMS

Early Childhood Education
Child and Youth Worker
Early Childhood and Youth Administration
Educational Technology
Elementary Teacher Education
APPRENTICESHIP

Completion of this type of apprenticeship will take 5,280 hours of on-the-job training as well as 720 hours of in-school training in classes at a community college. Graduates of the Early Childhood Educator/Child Development Practitioner program can choose to specialize in childcare practices for children with disabilities by entering a 3,000 hour Inclusion Practices Child Development Practitioner program.

WORKPLACE

Employed in elementary schools, nursery schools, preschools, child care centres, daycares, community centres, recreational facilities and agencies for exceptional children. Some are self-employed.
Family, marriage and other related counsellors assist individuals and groups of clients to identify, understand and overcome personal problems and achieve personal objectives.

**EXAMPLE TITLES**
- Addictions counsellor
- Bereavement counsellor
- Child and youth counsellor
- Psychoeducator
- Registered clinical counsellor
- Registered marriage and family therapist
- Rehabilitation counsellor
- Vocational rehabilitation counsellor
EMPLOYMENT REQUIREMENTS
A master’s degree in the field of counselling, mental health or a related social service discipline is usually required. An undergraduate degree or college diploma in a social science is required for certain areas of counselling. Membership with a provincial association for marriage and family therapists or clinical counsellors is required to use the title “Registered Marriage and Family Therapist” or “Registered Clinical Counsellor”. Membership with a provincial association may be required by some employers. Registered marriage and family therapists and registered clinical counsellors must meet strict criteria involving post-graduate education and a period of supervised clinical work with clients. Counsellors usually become specialized in a particular area through training and experience. Progression to social service management positions is possible with additional training and experience.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Marriage and Family Therapy
Psychology
Educational Psychology
Counselling Psychology
Social Work
Family Studies, General
Family and Social Relations
Counselling Skills

WORKPLACE
Employed by social service agencies, group homes, community organizations, health care and rehabilitation facilities, family therapy centres, counselling centres and government agencies, or they may work in private practice.

NOC 4153
Home support workers provide personal care and companionship for seniors, persons with disabilities and convalescent clients. Care is provided within the client’s residence, in which the home support worker may also reside. Housekeepers perform housekeeping and other home management duties in private households and other non-institutional, residential settings.

EXAMPLE TITLES
Attendant for persons with disabilities – home care
Family caregiver
Home support worker
Housekeeper
Live-in caregiver – seniors
Personal aide – home support
Personal care attendant – home care
Respite worker – home support
Personal support worker
EMPLOYMENT REQUIREMENTS
Some secondary school education is usually required. Home management experience may be required. College or other courses in home support may be required. Completion of a training program in care of the elderly, care of persons with disabilities, convalescent care or in a related field may be required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Home Care / Personal Support Worker
Health Care Aide
Gerontology - Social Services
Developmental Services Worker
Social Services Worker

WORKPLACE
Employers include hospitals and hospices, home care and support agencies, retirement homes, residential facilities and private households, or they may be self-employed.
Social and community service workers administer and implement a variety of social assistance programs and community services, and assist clients to deal with personal and social problems.

**EXAMPLE TITLES**

- Aboriginal outreach worker
- Addictions worker
- Child and youth worker
- Community development worker
- Crisis intervention worker
- Developmental service worker
- Family service worker
- Group home worker

- Life skills instructor
- Mental health worker
- Social services worker
- Veteran services officer
- Welfare and compensation officer
- Shelter supervisor
EMPLOYMENT REQUIREMENTS
Completion of a college or university program in social work, child and youth care, psychology or other social science or health-related discipline is usually required. Previous work experience in a social service environment as a volunteer or in a support capacity may replace formal education requirements for some occupations in this group. Social service workers may be required to be a member of a provincial regulatory body in some provinces.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Human Services, General
Social Work
Child and Youth Worker
Aboriginal Social Services
Social Services Worker
Gerontology - Social Services
Human Services Administration
Aide for Physically Challenged People

WORKPLACE
Employers include school boards, halfway houses, mental health agencies, substance abuse centres, correctional facilities, outreach groups, hospitals and clinics, shelters and social service and government agencies. Often work in cooperation with nurses, psychologists, social workers and other professionals.
Social workers help individuals, couples, families, groups, communities and organizations develop the skills and resources they need to enhance social functioning and provide counselling, therapy and referral to other supportive social services. Social workers also respond to other social needs and issues such as unemployment, racism and poverty.

**EXAMPLE TITLES**
- Co-ordinator of social work
- Medical social worker
- Psychiatric social worker
- Social work supervisor
- Social worker
EMPLOYMENT REQUIREMENTS
A bachelor’s degree in social work is required in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, British Columbia, the Northwest Territories and Nunavut.
Supervised practical experience and successful completion of provincial written and oral examinations is usually required. Registration with a provincial governing body is mandatory to practise as a social worker in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario and Alberta.
Use of the titles “Social Worker” and “Registered Social Worker” is regulated in all provinces, and membership in a provincial association of social workers is usually required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Social Work
Child and Youth Worker
Aboriginal Social Services
Counselling Skills
Social Services Worker
Sociology
Psychology
Addictions Studies and Counselling
Developmental and Child Psychology

WORKPLACE
Employers include government departments, school boards, hospitals, mental health clinics, child welfare organizations, correctional facilities, employee assistance programs and community health and social service agencies. Some may work in private practices.

NOC 4152
This is the largest category of occupations in Renfrew & Lanark Counties, employing approximately 20% of the labour force. It is projected that demand across this category will remain fairly high for several years as the current labour force reaches retirement age and must be replaced with skilled workers.
AUTOMOTIVE SERVICE TECHNICIANS, TRUCK AND BUS MECHANICS AND MECHANICAL REPAIRERS

Automotive service technicians, truck and bus mechanics and mechanical repairers inspect, diagnose, repair and service mechanical, electrical and electronic systems and components of cars, buses, and light and commercial transport trucks. This group also includes mechanical repairers who perform major repairs and replacement of mechanical units on newly assembled motor vehicles.

EXAMPLE TITLES
- Apprentice motor vehicle mechanic
- Automobile mechanic
- Brake systems mechanic
- Bus mechanic
- Mechanical upgrader – motor vehicle manufacturing
- Motor repairer – motor vehicle manufacturing
- Transmission mechanic
- Truck and transport mechanic
- Truck-trailer repairer
- Tune-up specialist – motor vehicle
EMPLOYMENT REQUIREMENTS

*Automotive service technicians:* Completion of secondary school and completion of a four-year automotive service technician apprenticeship program or a combination of over four years of work experience in the trade and high school, college or industry courses in automotive technology is required to be eligible for trade certification.

*Mechanical repairers, motor vehicle manufacturing:* Completion of secondary school is usually required and on-the-job training of two to three years is provided by employers.

*Truck and transport and truck-trailer mechanics:* Completion of secondary school and completion of a four-year truck and transport mechanic or truck-trailer repair apprenticeship or a combination of over four years of work experience in the trade and high school, college or industry courses in truck or heavy duty equipment mechanics is required to be eligible for trade certification.
AUTOMOTIVE SERVICE TECHNICIANS, TRUCK AND BUS MECHANICS AND MECHANICAL REPAIRERS

continued...

APPRENTICESHIP
An Automotive Service Technician apprenticeship (7,220 hours) is comprised of 6,500 hours of on-the-job training as well as three 8-week blocks of in-school training. A Truck & Coach Technician apprenticeship (6,720 hours) is comprised of 6,000 hours of on-the-job training as well as three 8 week blocks of in-school training (720 hours). Truck Trailer Service Technician must complete 4,000 hours of on-the-job training as well as two 8 week blocks of in-school training for a total of 4,480 hours. Trade certification for automotive service technicians, truck and transport mechanics, and transport trailer technicians is compulsory in Ontario.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Automotive Service Technology
Automotive Engineering Technology
Autobody Repair
Automotive Management and Marketing

WORKPLACE
They are employed by motor vehicle manufacturing companies, motor vehicle dealers, garages, truck and trailer dealerships, fleet maintenance companies, and service stations, automotive specialty shops, transportation companies and retail establishments which have automotive service shops.
NOC 7321
MANUFACTURING, SKILLED TRADES, CONSTRUCTION & LABOURERS
Carpenters construct, erect, install, maintain and repair structures and components of structures made of wood, wood substitutes, lightweight steel and other materials.

**EXAMPLE TITLES**
Apprentice carpenter  
Carpenter  
Carpenter-joiner  
Finish carpenter  
Journeyman/woman carpenter  
Maintenance carpenter  
Metal framer – carpentry  
Renovation carpenter  
Rough carpenter  
Stair builder-carpenter
EMPLOYMENT REQUIREMENTS
Completion of secondary school and completion of a three- to four-year apprenticeship program or a combination of over four years of work experience in the trade and some high school, college or industry courses in carpentry is usually required to be eligible for trade certification.

APPRENTICESHIP
The apprenticeship program for Carpenters ranges from 3,844 hours up to 7,200 hours. Trade certification for carpenters is compulsory in Quebec and available, but voluntary, in all other provinces and the territories.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Carpentry
Cabinetmaking
Furniture Design and Manufacturing
Woodworking, General
WORKPLACE
Carpenters are employed by construction companies, carpentry contractors, and maintenance departments of factories, plants and other establishments, or they may be self-employed.
Crane operators operate cranes or draglines to lift, move, position or place machinery, equipment and other large objects at construction or industrial sites, ports, railway yards, surface mines and other similar locations.

**EXAMPLE TITLES**
- Boom truck crane operator
- Bridge crane operator
- Climbing crane operator
- Construction crane operator
- Dragline crane operator
- Gantry crane operator
- Hoist operator (except underground mining)
- Mobile crane operator
- Tower crane operator
- Tractor crane operator

**EMPLOYMENT REQUIREMENTS**
Completion of secondary school and completion of a one- to three year apprenticeship program or high school, college or industry courses in crane operating are usually required. Mobile crane operators may require a provincial licence to drive mobile cranes on public roads. Internal company certification as a crane operator may be required by some employers.

**APPRENTICESHIP**
Completion of Hoisting Engineer Mobile Crane Operator Branch 1 requires 6,000 hours that includes two 240 hour in-school training sessions. Branch 2 is a 1,000 hour apprenticeship involving 1 in-school training session of 240 hours.
RELATED COLLEGE & UNIVERSITY PROGRAMS
Heavy Equipment Operation
Heavy Equipment Mechanics

WORKPLACE
They are employed by construction, industrial, mining, cargo handling and railway companies.
Electrical power line and cable workers construct, maintain and repair overhead and underground electrical power transmission and distribution systems.

**EXAMPLE TITLES**
- Apprentice lineman/woman – electric power systems
- Cable installer – electrical power
- Cable splicer – electrical power
- Construction lineman/woman – electrical power line
- Power line patroller
- Power lineman/woman
- Powerline technician
EMPLOYMENT REQUIREMENTS
Completion of secondary school and completion of a provincial three- or four-year lineman/woman apprenticeship program or a combination of over four years of work experience in the trade and some high school, college or industry courses in electrical technology is usually required for electrical power line and cable workers.

APPRENTICESHIP
Total length of this apprenticeship is 8,000 hours. A certificate of qualification can be awarded on successful completion of your examination. Trade certification for powerline technicians is available, but voluntary, in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Ontario, Saskatchewan, Alberta, British Columbia, the Yukon, the Northwest Territories and Nunavut.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Utility Lineworker
Electrical Work
Communications / Telecommunications Technology
Electrical / Electronics Engineering Technology

WORKPLACE
Electrical power line and cable workers are employed by electric power generation, transmission and distribution companies, electrical contractors, public utility commissions or telecommunications companies. Some may be self-employed.
Electricians in this group lay out, assemble, install, test, troubleshoot and repair electrical wiring, fixtures, control devices and related equipment in buildings and other structures.

**EXAMPLE TITLES**
- Apprentice electrician
- Construction electrician
- Construction electrician apprentice
- Domestic and rural electrician
- Electrician
EMPLOYMENT REQUIREMENTS
Completion of secondary school and completion of a four- to five-year apprenticeship program is usually required.

APPRENTICESHIP
An electrician apprenticeship of 7,200 to 9,000 hours is comprised of on-the-job and in-school training. Trade certification for construction electricians is compulsory in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan and Alberta and available, but voluntary, in British Columbia, the Yukon, the Northwest Territories and Nunavut. Trade certification for electricians (domestic and rural) is compulsory in Newfoundland and Labrador and Ontario. Trade certification for electrical control (machine) builders is available, but voluntary, in Ontario.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Electrical Work
Utility Lineworker
Construction Engineering Technology
Industrial Electronics Technology

WORKPLACE
Electricians work for electrical contracting companies, industrial plants, and construction companies. They often work in homes, on construction sites, in factories, and in electrical utility stations. They may be employed by maintenance departments of buildings and other establishments, or they may be self-employed.
Heavy equipment operators operate heavy equipment used in the construction and maintenance of roads, bridges, airports, gas and oil pipelines, tunnels, buildings and other structures; in surface mining and quarrying activities; and in material handling work.

**EXAMPLE TITLES**
- Backhoe operator
- Bulldozer operator
- Excavator operator
- Gradall operator
- Grader operator
- Loader operator – construction
- Side boom tractor operator
- Surface mining equipment operator
EMPLOYMENT REQUIREMENTS
Some secondary school education and completion of a one- to two-year apprenticeship program or some high school, college or industry courses in heavy equipment operating combined with on-the-job training are required. Internal company certification may be required by some employers.

APPRENTICESHIP
Completion of this non-regulated apprenticeship as a Heavy Equipment Operator will take 2,260 hours and could include classes at community college or industry courses as well as on-the-job training.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Heavy Equipment Operation
Heavy Equipment Mechanics
Truck and Transport Driving
Heavy Duty Truck / Transport Mechanics

WORKPLACE
They are employed by construction companies, heavy equipment contractors, public works departments and pipeline, logging, cargo-handling and other companies.
Industrial electricians install, maintain, test, troubleshoot and repair industrial electrical equipment and associated electrical and electronic controls.

**EXAMPLE TITLES**
- Electrician, shipyard
- Industrial electrician
- Industrial electrician apprentice
- Marine electrician
- Mill electrician
- Mine electrician
- Plant electrician
- Plant maintenance electrician
EMPLOYMENT REQUIREMENTS
Completion of secondary school and completion of a four- or five-year industrial electrician apprenticeship program or a combination of over five years of work experience in the trade and some high school, college or industry courses in industrial electrical equipment is usually required to be eligible for trade certification. Additional construction electrician certification may be required for industrial electricians when the employers are not owners of the industrial electrical equipment.

APPRENTICESHIP
Trade certification for industrial electricians is compulsory in Prince Edward Island, Quebec and Manitoba and available, but voluntary, in Newfoundland and Labrador, Nova Scotia, New Brunswick, Ontario, British Columbia and the Yukon.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Electrical Work
Utility Lineworker
Construction Engineering Technology
Industrial Electronics Technology

WORKPLACE
Industrial electricians are employed by electrical contractors and maintenance departments of factories, plants, mines, shipyards and other industrial establishments.
Insulators apply insulation materials to plumbing, air-handling, heating, cooling and refrigeration systems, piping equipment and pressure vessels, and walls, floors and ceilings of buildings and other structures, to prevent or reduce the passage of heat, cold, sound or fire.

**EXAMPLE TITLES**
- Boiler and pipe insulator
- Building insulator
- Firestopping insulator
- Heat and frost insulator
- Insulation applicator
- Insulation mechanic
- Insulator
- Insulator apprentice
- Sound insulator

![Earnings Chart](chart.png)

*Earnings Chart*

- $110,000
- $100,000
- $90,000
- $80,000
- $70,000
- $60,000
- $50,000
- $40,000
- $30,000
- $20,000
- $10,000

*Demand*

- High demand
- Some demand
- Stable
EMPLOYMENT REQUIREMENTS
Completion of secondary school and completion of a three- to four-year apprenticeship program or a combination of over four years of work experience in the trade and some high school, college or industry courses in insulating is usually required to be eligible for trade certification.

APPRENTICESHIP
Completion of a 6,400 hour apprenticeship (approximately 4 years) will include a combination of on-the-job and in-school training. Trade certification for insulators (heat and frost) is compulsory in Quebec and available, but voluntary, in Ontario, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Manitoba, Saskatchewan, Alberta, British Columbia, the Yukon, the Northwest Territories and Nunavut.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Construction Trades, General

WORKPLACE
Insulators are employed by construction companies and insulation contractors, or they may be self-employed.
This group includes those who survey and assess landscapes; draw sketches and build models of landscape designs; construct and maintain gardens, parks, golf courses and other landscaped environments; advise clients on issues related to horticulture such as irrigation; breed, cultivate and study plants; and treat injured and diseased trees and plants.

**EXAMPLE TITLES**
- Arborist
- Golf course superintendent
- Greenskeeper
- Horticultural technician
- Horticulture specialist
- Horticulturist
- Hydroponics technician
- Landscape designer
- Landscape gardener
- Landscape technician
- Landscaper
- Lawn care specialist
- Tree service technician

**EMPLOYMENT REQUIREMENTS**
Completion of a university or college program in agronomy, arboriculture, horticulture, landscaping, landscape design or landscape technology is usually required.
Experience as a landscape and grounds maintenance labourer may be required for golf course superintendents, landscape gardeners and landscapers.
APPRENTICESHIP
An apprenticeship program is available for horticulturists, arboriculturists and landscape gardeners. The apprenticeships of approximately 6,600 hours include a combination of work experience and college courses. You must also successfully complete the required examinations and hours of employment in order to be awarded a Journeyperson certificate.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Landscape Management and Design
Landscape Technology
Horticulture / Gardening
Landscape Architecture
Botany / Plant Science

WORKPLACE
They are employed by landscape designers and contractors, lawn service and tree care establishments, golf courses, nurseries and greenhouses, and municipal, provincial and national parks, or they may be self-employed.

NOC 2225
LANDSCAPING AND GROUNDS MAINTENANCE LABOURERS

Landscaping and grounds maintenance labourers perform work to assist in the construction of landscapes and related structures, and to maintain lawns, gardens, athletic fields, golf courses, cemeteries, parks, landscaped interiors and other landscaped areas.

EXAMPLE TITLES

- Bulb planter – landscaping
- Cemetery labourer
- Gardening helper
- Golf course worker
- Grass cutter
- Grounds maintenance worker
- Landscape labourer
- Maintenance worker, parks
- Park maintenance labourer
- Sod layer
- Transplanter – landscape maintenance

$110,000
$100,000
$90,000
$80,000
$70,000
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
EMPLOYMENT REQUIREMENTS
Some secondary school education may be required. A provincial licence to apply chemical fertilizers, fungicides, herbicides and pesticides may be required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Landscape Management and Design
Landscape Technology
Horticulture / Gardening
Landscape Architecture
Botany / Plant Science
Floral Design and Marketing

WORKPLACE
They are employed by landscaping and lawn care companies, golf courses, cemeteries, and landscaping operations of public works departments and private establishments. Some may be self employed.
MACHINING TOOL OPERATORS

Machining tool operators set up and operate or tend metal-cutting machines designed for repetitive machining work. This group also includes workers who etch or chemically mill metal pieces.

EXAMPLE TITLES
- CNC machining tool operator
- Aircraft parts etcher
- Boring mill operator – metal machining
- Lathe machining operator
- Machining tool operator
- Milling machine set-up operator
- Production gear cutter
- Production grinder operator – metal machining
- Radial drill operator – metal machining
EMPLOYMENT REQUIREMENTS
Some secondary school education is required. College or other courses in machining may be required. Several months of on-the-job training are provided. Senior positions in this group, such as set-up operator, require experience as a machine operator. Experienced machining tool operators may become machinists or tool and die makers through apprenticeship training.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Metal / Sheetmetal Technology
Industrial Control Technology
Manufacturing Technology
Automation / Robotics Technology
Mechanical Engineering Technology
Microelectronics Manufacturing
Machining / Machine Shop Technology

WORKPLACE
Machining tool operators are employed by metal products and other manufacturing companies and in machine shops.
MACHINISTS AND MACHINING AND TOOLING INSPECTORS

Machinists set up and operate a variety of machine tools to cut or grind metal, plastic or other materials to make or modify parts or products with precise dimensions. Machining and tooling inspectors inspect machined parts and tooling in order to maintain quality control standards.

EXAMPLE TITLES
Automotive machinist
Aviation machinist
General machinist
Machine shop inspector
Machined parts inspector
Machining inspector
Machinist
Machinist apprentice
Tooling inspector
EMPLOYMENT REQUIREMENTS
Completion of secondary school is usually required. Completion of a four-year apprenticeship program or a combination of over four years of work experience in the trade and some college or industry courses in machining is usually required to be eligible for trade certification. Several years of experience as a machinist, tool and die maker or machining tool operator may be required for machining and tooling inspectors.

APPRENTICESHIP
Trade certification for machinists is available, but voluntary, in all provinces and territories. The machinist apprenticeship program of 7,280 hours or four years includes a combination of work experience in the trade (90%) and college or industry courses - three 8 week in-school sessions. Successful completion of the required examinations and hours of employment is necessary in order to be awarded a Journeyperson certificate.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Machining / Machine Shop Technology
Industrial Control Technology
Metal / Sheetmetal Technology

WORKPLACE
Machinists are employed by machinery, equipment, motor vehicle, automotive parts, aircraft and other metal products manufacturing companies and by machine shops.

NOC 7231
Assemblers in this group assemble a wide variety of mechanical products such as trucks, buses, snowmobiles, garden tractors, automotive engines, transmissions, outboard motors, gearboxes, hydraulic pumps and sewing machines. Inspectors in this group check and inspect subassemblies and finished products to ensure proper quality and product specifications.

**EXAMPLE TITLES**
- Garden machinery assembler
- Gearbox assembler
- Gearcase assembler
- Hydraulic hoist assembler
- Mechanical assembler
- Snowmobile assembler
- Tractor assembler
- Transmission assembler
- Truck assembly inspector
- Truck trailer assembler
EMPLOYMENT REQUIREMENTS
Some secondary school education is required. Up to two years of on-the-job training are provided. Experience as a mechanical assembler may be required for inspectors in this group.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Automotive Engineering Technology
Manufacturing Technology
Automotive Service Technology

WORKPLACE
Mechanical assemblers and inspectors are employed by machinery and transportation equipment manufacturers and by other manufacturing companies. There is little or no mobility among the various assemblers and inspectors in this group.
Motor vehicle body repairers repair and restore damaged motor vehicle body parts and interior finishing; repaint body surfaces; and repair and/or replace automotive glass. This group also includes metal repairers who repair defective automobile body parts and damage to the bodies of newly assembled cars.

**EXAMPLE TITLES**
- Autobody repairer
- Automotive body mechanic
- Automotive glass technician
- Automotive painter – motor vehicle repair
- Automotive painter apprentice
- Metal finisher – motor vehicle manufacturing
- Metal repairer – motor vehicle manufacturing
- Motor vehicle body repairer apprentice
- Motor vehicle body technician – truck
- Painter – motor vehicle repair
EMPLOYMENT REQUIREMENTS

Motor vehicle body repairers:
Completion of secondary school and a three- to four-year motor vehicle body repair apprenticeship program or a combination of over three years of work experience in the trade and completion of a high school or college automotive body repair program is usually required to be eligible for trade certification.

Automotive painters:
Completion of secondary school and a two- to three-year apprenticeship program or a combination of one year of work experience in the automotive painter trade and completion of a high school or college automotive painting program is usually required for automotive painter trade certification.

Automotive glass installers and repairers:
Completion of secondary school and auto glass industry certification is usually required.

Metal repairers, motor vehicle manufacturing:
Completion of secondary school is usually required and one to two years of on-the-job training are provided.

APPRENTICESHIP

A 7,200 hour apprenticeship that combines on-the-job and in-school training must be completed before sitting a written examination to obtain your Certificate of Qualification. Trade certification is compulsory in Ontario.

RELATED COLLEGE & UNIVERSITY PROGRAMS

Autobody Repair
Upholstery
Automotive Service Technology

WORKPLACE

They are employed by automobile dealerships, motor vehicle manufacturers, automobile body repair shops and automobile appraisal centres.
Mechanics in this group test, repair and service motorcycles, motor scooters, snowmobiles, forklifts and all-terrain vehicles.

EXAMPLE TITLES
- All-terrain vehicle repairer
- Forklift mechanic
- Industrial truck repairer
- Motor boat mechanic
- Motor scooter repairer
- Motorcycle mechanic
- Motorcycle mechanic apprentice
- Outboard motor mechanic
- Snowmobile repairer

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<tr>
<th>Earnings</th>
<th>$110,000</th>
<th>$100,000</th>
<th>$90,000</th>
<th>$80,000</th>
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<th>$40,000</th>
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Demand
- High demand
- Some demand
- Stable
EMPLOYMENT REQUIREMENTS
Completion of secondary school is usually required. For motorcycle mechanics, completion of a three- to four-year apprenticeship program or a combination of over three years of work experience in the trade and some high school or college courses in motorcycle repair is usually required to be eligible for trade certification. Other mechanics in this group may require several years of on-the-job training.

APPRENTICESHIP
You can obtain a Certificate of Apprenticeship after completing on-the-job training as well as in-school training for a total of 6,000 to 7,000 hours and successfully completing a written examination. Motorcycle mechanic trade certification is compulsory in Ontario.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Motorcycle Repair
Automotive Service Technology
Automotive Engineering Technology
Small Engine Repair

WORKPLACE
They are employed by service shops of motorcycle dealers and retailers and by independent service establishments.
OTHER REPAIRERS AND SERVICERS

This group includes workers, not elsewhere classified, who repair and service a wide variety of products, such as cameras, scales, musical instruments, coin machines, vending machines, sporting goods and other miscellaneous products and equipment.

EXAMPLE TITLES
Bicycle repairer
Camera repairer
Meter repairer
Piano repairer
Scale repairer
Sewing machine servicer – domestic
Sporting goods repairer
Vending machine repairer
EMPLOYMENT REQUIREMENTS
Some secondary school education is usually required. Completion of college or other courses relevant to a particular equipment or product repair or completion of several months of on-the-job training is sometimes required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Electronics Technology and Repair
Woodworking, General
Music Instrument Repair
Appliance Servicing

WORKPLACE
They are employed by product specialty repair shops, service establishments, retail stores and product manufacturers, or they may be self-employed. Some mobility may occur among workers in this group.
OTHER TRADES HELPERS AND LABOURERS

This group includes trade helpers and labourers, not elsewhere classified, who assist skilled tradespersons and perform labouring activities in the installation, maintenance and repair of industrial machinery, refrigeration, heating and air conditioning equipment, in the maintenance and repair of transportation and heavy equipment, in the installation and repair of telecommunication and power cables and in other repair and service work settings.

EXAMPLE TITLES
Aerial spraying assistant
Aircraft mechanic helper
Cable installer helper
Diesel mechanic helper
Ground worker – telecommunications
Mechanic’s helper – automotive
Millwright helper
Refrigeration mechanic helper
Splicer helper – telecommunications
Surveyor helper
EMPLOYMENT REQUIREMENTS
Some secondary school education may be required. On-the-job training is provided.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Construction Trades, General
Construction Trades, Other

WORKPLACE
They are employed by a wide variety of construction, manufacturing, utility and service companies. There is little or no mobility between occupations in this group.

NOC 7612
Plumbers install, repair and maintain pipes, fixtures and other plumbing equipment used for water distribution and waste water disposal in residential, commercial and industrial buildings.

**EXAMPLE TITLES**
- Maintenance plumber
- Plumber
- Plumber apprentice
- Plumbing mechanic
EMPLOYMENT REQUIREMENTS
Completion of secondary school and completion of a four- to five-year apprenticeship program or a combination of over five years of work experience in the trade and some high school, college or industry courses in plumbing is usually required to be eligible for trade certification.

APPRENTICESHIP
You may enter an apprenticeship program of 9,000 hours, and must successfully pass a written examination to obtain your Certificate of Qualification as a plumber. Trade certification is compulsory in Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Saskatchewan and Alberta and available, but voluntary, in Newfoundland and Labrador, Manitoba, British Columbia, the Yukon, the Northwest Territories and Nunavut.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Plumbing
Construction Engineering Technology
Steamfitting and Pipefitting
Plumbing and Water Supply Trades, Other

WORKPLACE
Plumbers are employed in maintenance departments of factories, plants and similar establishments, by plumbing contractors, or governments or they may be self-employed.

NOC 7251
Power engineers operate and maintain reactors, turbines, boilers, generators, stationary engines and auxiliary equipment to generate electrical power and to provide heat, light, refrigeration and other utility services for commercial, industrial and institutional buildings and other work sites. Power systems operators monitor and operate switchboards and related equipment in electrical control centres to control the distribution of electrical power in transmission networks.

**EXAMPLE TITLES**
- Building systems technician
- Electrical power systems operator
- Energy from waste plant operator
- Load dispatcher apprentice – electrical power systems
- Nuclear generating station field operator
- Nuclear reactor operator – electrical power systems
- Power dispatcher – generating station
- Power plant operator
- Power plant stationary engineer
- Stationary engineer
- System controller – electrical power systems
**EMPLOYMENT REQUIREMENTS**

Power engineers require a college training program in stationary or power engineering and several years of work experience in the field as well as a provincial or territorial power engineering or stationary engineering certificate according to class.

Power systems operators usually require completion of a three- to five-year power system operator apprenticeship program or over three years of work experience in the trade and some college or industry courses in electrical and electronic technology.

Control room operators at nuclear power plants require licensing from the Canadian Nuclear Safety Commission.

**APPRENTICESHIP**

Stationary engineer trade certification according to class (4th, 3rd, 2nd or 1st class) is compulsory in Nova Scotia and Quebec and available, but voluntary in New Brunswick.

**RELATED COLLEGE & UNIVERSITY PROGRAMS**

- Power Engineering Technology
- Heating, Air Conditioning, Ventilation, and Refrigeration Technology
- Industrial Maintenance / Millwright Technology
- Building Systems Technology
- Mechanical Techniques, General

**WORKPLACE**

They are employed by power generation plants, electrical power utilities, manufacturing plants, hospitals, universities and government and commercial establishments. There is little mobility between nuclear power generation station operators and other classic or alternative power generation station operators.

**NOC 9241**
Sheet metal workers fabricate, assemble, install and repair sheet metal products.

**EXAMPLE TITLES**

- Apprentice sheet metal worker
- Sheet metal fabricator
- Sheet metal mechanic
- Tinsmith
EMPLOYMENT REQUIREMENTS
Completion of secondary school is usually required. Completion of a three to five year apprenticeship program or a combination of over four years of work experience in the trade and some high school, college or industry courses in sheet metal working is usually required to be eligible for trade certification.

APPRENTICESHIP
The Sheet Metal Worker apprenticeship combines 9,000 hours of work experience and in-school training sessions. The minimum entry requirement under the TQA is Grade 10. You must successfully complete a written test to receive your Certificate of Qualification upon completion of your apprenticeship. Trade certification is compulsory in Quebec, Ontario, Saskatchewan and Alberta, and available, but voluntary, in all other provinces and the territories.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Metal / Sheetmetal Technology
Heating, Air Conditioning, Ventilation, and Refrigeration Technology

WORKPLACE
Sheet metal workers are employed by sheet metal fabrication shops, sheet metal products manufacturing companies, sheet metal work contractors and various industrial sectors. Many also work for plumbing, heating, and air-conditioning contractors or roofing contractors.

NOC 7233
Tool and die makers make, repair and modify custom-made, prototype or special tools, dies, jigs, fixtures and gauges using various metals, alloys and plastics which require precise dimensions.

**EXAMPLE TITLES**
- Die finisher
- Die maker
- Jig maker
- Metal mould maker
- Metal patternmaker
- Metal patternmaker apprentice
- Mould maker – plastics processing
- Mould maker apprentice
- Tool and die maker apprentice
- Toolmaker
EMPLOYMENT REQUIREMENTS
Completion of secondary school is usually required. Completion of a four- or five-year tool and die making apprenticeship program or a combination of over five years of work experience in the trade and some high school, college or industry courses in tool and die making is usually required to be eligible for tool and die trade certification. Mould makers usually require completion of a four-year apprenticeship or college program in mould making. Patternmakers usually require completion of an apprenticeship or college program in patternmaking.

APPRENTICESHIP
Apprenticeships include approximately 7,280 hours of work experience and 3 eight week in-school training sessions. Tool and die making trade certification is available, but voluntary, in Newfoundland and Labrador, Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Manitoba, Alberta and British Columbia. Trade certification for mould makers is available, but voluntary, in Quebec and Ontario. Patternmaking trade certification is available, but voluntary, in Ontario.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Tool and Die Making
Machining / Machine Shop Technology
Mechanical Engineering Technology

WORKPLACE
Tool and die makers are employed primarily in manufacturing industries such as automobile, aircraft, metal fabrication, electrical machinery, metalworking machinery, transportation equipment and plastics products, and in tool and die, mould making and machine shops.

NOC 7232
Welders operate welding equipment to weld ferrous and non-ferrous metals. This group also includes machine operators who operate previously set up production welding, brazing and soldering equipment.

**EXAMPLE TITLES**
- Aviation welding technician
- Brazing machine operator
- Brazing machine setter
- Electric arc welder
- Laser welding operator
- Pressure vessel welder
- Production welder
- Soldering machine operator
- Spot welder
- Submerged arc welder
- Welder-fitter
EMPLOYMENT REQUIREMENTS
Completion of secondary school and a three-year apprenticeship program or a combination of over three years of work experience in the trade and some college or industry courses in welding is usually required to be eligible for trade certification as a Welder.
Welding, brazing and soldering machine operators require some secondary school education. Several months of on-the-job training are usually provided. Experience as a machine operator helper may be required. Experience with robotics may be required.

APPRENTICESHIP
Completion of an apprenticeship could take approximately 3 years (5,280 hours) including 3 periods in-school theory (Level 1: 10 weeks; Level 2: 6 weeks; Level 3: 8 weeks). Upon successful completion of the training agreement, you will receive a Certificate of Apprenticeship.
Trade certification is compulsory in Alberta and available, but voluntary, in all other provinces.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Welding
Welding Engineering Technology
Welding Inspection
Construction Trades, General
Metal / Sheetmetal Technology

WORKPLACE
Welders are employed by companies that manufacture structural steel and platework, boilers, heavy machinery, aircraft and ships and other metal products, and by welding contractors and welding shops, or they may be self-employed. Some work in the construction industry.

NOC 7237
You may well retire from a job which doesn’t exist now. Your great-grandparents didn’t even have a word or concept for “software programmer”. New technologies and job descriptions are emerging every day, even in our area. This category profiles the most prominent occupations in emerging industries in Renfrew and Lanark Counties.
Civil engineering technologists and technicians provide technical support and services to 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.

**EXAMPLE TITLES**
- Agricultural engineering technician
- Air pollution field technician
- Environmental technician
- Land use technician
- Pollution control technician
- Solid waste disposal technician
- Water distribution systems technician
- Bridge design technician
- Building materials technician
- Civil engineering technician
- Civil engineering technologist
- Construction technologist
- Highway technician
- Municipal engineering assistant
- Soil technologist – civil engineering
- Specifications writer, construction
- Structural design technologist

![Earnings Chart](chart)
EMLOYMENT 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.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Civil Engineering Technology
Civil Engineering
Civil Drafting / Civil CAD
CAD Drafting and Design Technology

WORKPLACE
Employed by construction companies, contractors, engineering consulting firms, manufacturing companies, land developers, municipalities, and in renewable energy, environmental protection and other industries. May work in offices and labs, and outdoors on construction sites.
Civil engineers plan, design, develop and manage projects for the construction or repair of buildings, earth structures, powerhouses, roads, airports, railways, rapid transit facilities, bridges, tunnels, canals, dams, ports and coastal installations and systems related to highway and transportation services, water distribution and sanitation. Civil engineers may also specialize in foundation analysis, building and structural inspection, surveying, geomatics and municipal planning.

**EXAMPLE TITLES**

Environmental engineer  
Bridge engineer  
Construction engineer  
Geodetic engineer  
Geomatics engineer  
Highway engineer  
Hydraulics engineer  
Municipal engineer  
Project engineer, construction  
Public works engineer  
Sanitation engineer  
Structural engineer  
Surveying engineer  
Traffic engineer  
Transportation engineer  
Water management engineer
EMPLOYMENT REQUIREMENTS
A bachelor’s degree in civil engineering or in a related engineering discipline is required.
A master’s degree or doctorate in a related engineering discipline may be required.
Licensing by a provincial or territorial association of professional engineers is required to approve engineering drawings and reports and to practise as a Professional Engineer (P.Eng.). Engineers are eligible for registration following graduation from an accredited educational program, and after three or four years of supervised work experience in engineering and passing a professional practice examination.
Leadership in Energy and Environmental Design (LEED) certification is offered by the Canada Green Building Council and may be required by some employers.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Civil Engineering
Architecture
Civil Drafting / Civil CAD
Civil Engineering Technology

WORKPLACE
Work for engineering firms, manufacturing and construction companies, government agencies, and in renewable energy, environmental protection and other industries.
Electrical and electronics engineers design, plan, research, evaluate and test electrical and electronic equipment and systems.

**EXAMPLE TITLES**
- Avionics engineer
- Control systems engineer
- Design engineer, electrical
- Distribution planning engineer, electrical
- Electrical engineer
- Electrical network engineer
- Electronics engineer
- Instrumentation and control engineer
- Planning engineer, electrical systems
- Process control engineer, electrical
- Roadway lighting design engineer
- Television systems engineer
- Test engineer, electronics
- Solar energy technician
EMPLOYMENT REQUIREMENTS
A bachelor’s degree in electrical or electronics engineering or in an appropriate related engineering discipline is required. A master’s or doctoral degree in a related engineering discipline may be required.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Electrical / Electronics Engineering
Computer Engineering
Electrical / Electronics Engineering Technology
Electromechanical Engineering Technology

WORKPLACE
Most work for manufacturers of computer or electronic products, or for professional, scientific, and technical services firms. Some work for electrical power generation companies, including renewable energy, communication companies and government departments. Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practise in associated areas of science, engineering, sales, marketing or management.
Workers in this group install and service a wide variety of interior and exterior prefabricated products such as windows, doors, electrical appliances, water heaters, fences, play structures, septic and irrigation systems and renewable energy generation systems at residential, commercial or institutional properties.

**EXAMPLE TITLES**
- Aluminum window installer
- Eavestrough installer
- Electric appliance installer
- Exterior cladder
- Fence erector
- Hot tub installer
- Irrigation technician – installation and maintenance
- Kitchen cupboard and vanity installer
- Recreation structure erector
- Siding installer
- Sign installer
- Swimming pool installer
- Water conditioner servicer
- Water heater servicer
- Window installer
EMERGING OCCUPATIONS

EMPLOYMENT REQUIREMENTS
Some secondary school education is usually required. On-the-job training and several months of related installing, repairing or servicing experience are usually required. A driver’s licence may be required.

APPRENTICESHIP
Some specialized installers and servicers can complete an apprenticeship. In order to indenture as an apprentice, you must be at least 16 years of age or older in the province of Ontario and have completed Grade 12 or equivalent. High school courses in English, Math or Science would be helpful, and enrollment in cooperative education would be an asset. Completion of this type of apprenticeship will take 6,000 hours and will include theory classes and experience on-the-job.

WORKPLACE
Residential and commercial installers and servicers are employed by companies specializing in specific product installation and service across a wide variety of industries.

NOC 7441
Technical sales specialists, wholesale trade, sell a range of technical goods and services, such as scientific, agricultural and industrial products, electricity, telecommunications services and computer services, to governments and to commercial and industrial establishments in domestic and international localities. Technical sales specialists who are supervisors are included in this group.

**EXAMPLE TITLES**

Aircraft sales representative
Communication equipment sales representative
Construction equipment sales representative
Electricity sales representative
Grain elevator district manager
Grain elevator operator
Heavy equipment sales representative

Industrial supplies sales representative
Medical instruments sales agent
Sales engineer, technical support
Software sales representative
Technical sales representative
Technical sales supervisor
Technical support specialist – wholesale trade
EMPLOYMENT REQUIREMENTS
A university degree or college diploma in a program related to the product or service is usually required. Experience in sales or in a technical occupation related to the product or service may be required. Fluency in a specific foreign language, and/or foreign work or travel experience may be required for technical sales specialists seeking employment with companies that import or export technical goods or services. Technical sales supervisors require experience as a technical sales specialist.

RELATED COLLEGE & UNIVERSITY PROGRAMS
Marketing (Certificate / Diploma)
Marketing (Undergraduate)
Customer Service and Sales
Retail Management and Services

WORKPLACE
They are employed by establishments that produce or provide technical goods and services, such as pharmaceutical companies, industrial equipment manufacturing companies, grain elevators, computer services firms, engineering firms and hydroelectric companies, or they may be self-employed technical sales specialists/agents who contract their services to other companies.
OTHER

This category profiles selected occupations in Renfrew and Lanark Counties that are considered high priority but are not classified under the general National Occupational Classification system as they are specific to the Canadian Forces. Occupational demand in this category constantly changes to meet the needs of our Department of National Defense.
Ammo Techs are the custodians of the Canadian Forces (CF) ammunition stockpiles and the related explosives safety programs. In addition to controlling the inventory, they perform technical inspections, tests, proofs, maintenance, modification and logistical disposal of tri-service ammunition.

**EXAMPLE TITLES**
- Engineering inspectors and regulatory
- Material handlers
- Other assemblers and inspectors
- Other metal products machine operators
EMPLOYMENT REQUIREMENTS
In addition to Basic Military Qualification and Soldier Qualification training, the Ammo Tech apprentice curriculum consists of a formal basic occupational qualification (Ammo Tech QL3 part 1), which is a 6-month course, conducted at the Canadian Forces School of Administration and Logistics (CFSAL Borden). This is followed by an On-Job Performance Requirement (OJPR) program (Ammo Tech QL3 part 2), which is conducted at an ammunition facility.

Upon successful completion of the QL3 course described above, the Ammo Tech will be posted to an ammunition facility in order to conduct the OJPR phase of training. On completion of the QL5A, a technician is considered to be fully operationally functional, and is eligible to deploy on operational tours.

SPECIALTY TRAINING
Ammo Techs may also be trained in the following specialties:
Improvised Explosive Device Disposal (IEDD)
Transportation of Dangerous Goods (3K)
Disposal of Biological/Chemical munitions (conducted in the UK)
Marine Explosive Handling (SRO) (conducted in the US)
Throughout an Ammo Tech’s career many additional, non-trade specific, opportunities for professional development are also available.

WORKPLACE
Ammo Techs are employed by the Canadian Forces and work in a wide variety of locations and environmental conditions. A technician’s career is usually divided between Chief Land Staff (CLS), Canadian Material Support Group (CMSG), Canadian Forces Support Training Group (CFSTG), Special Operations Forces and other units.
The Water, Fuels and Environmental Technician (WFE TECH) provides water supply, waste water treatment and environmental engineering support to operational units at home and abroad. During peacetime, WFE TECHs maintain their skills while employed at home units or on humanitarian and United Nations operational assignments. The WFE TECH occupation is one of seven Construction Engineering occupations involved in the supply of all construction, civil, electrical and mechanical engineering services in support of Canadian Forces operations worldwide.

EXAMPLE TITLES
Water Plant Technician
Waste Water Plant Technician
Environmental Assessor
Certified Engineering Technician (Mechanical)

EMPLOYMENT REQUIREMENTS
In addition to Basic Military Qualification (BMQ), Water, Fuels and Environmental Technicians attend Basic Military Occupational (MOC) Training at the Canadian Forces School of Military Engineering (CFSME) in Gagetown, New Brunswick. Training takes approximately 29 weeks and includes:

- Environmental skills such as defensive tactics and firearms
- Care and use of common and special purpose tools and test equipment
- Application of occupational codes and regulations
- Interpretation of drawings and schematics
- Water distribution and treatment systems
- Waste water disposal and treatment systems
- Soil testing and remediation
- Fuel storage and distribution systems
- Environmental monitoring and testing
- Chemistry, fluids and mechanical principles
- Brazing and welding techniques
SPECIALTY TRAINING
Personnel who demonstrate the required ability and motivation can undertake advanced occupational training through formal courses and on-the-job training as they progress in their career field. Specialty training may also be provided. Those WFE TECHs who have the required qualifications and attain the rank of Sergeant would be eligible to enter the Construction Engineering Superintendent (MOC 649) occupation, with possible progression to the rank of Chief Warrant Officer. Listed below are examples of the specialty courses available.

Specialty Courses:
- Advanced Water Treatment
- Instructional Techniques

WORKPLACE
WFE TECHs are employed by the Canadian Forces. On completion of basic occupational training, WFE TECHs can expect to be posted to one of the following units:
- Airfield Engineering Flight (Air Force Environment)
- Construction Troop (Army Environment)
- Naval Construction Troop (Navy Environment)
- Base/Wing Construction Engineering Section
ADDITIONAL RESOURCES

www.hrsdc.gc.ca

HRSDC’s mission is to build a stronger and more competitive Canada, to support Canadians in making choices that help them live productive and rewarding lives, and to improve Canadians’ quality of life. Tools include the National Occupational Classification (NOC) System and the Canadian Occupational Projection System (COPS).

www.careercruising.com

Everyone has a career dream. Our mission is to inform those dreams to help bring them to life, by developing the world’s most engaging and inspiring career exploration software, full of useful real-world career information.

www.apprenticeshipsearch.com

The Industry Education Council in partnership with Human Resources Development Canada spearheaded the development of apprenticeshipsearch.com, a website designed to help connect apprentices and employers across Ontario. It is a free service operated by not-for-profit organizations and community agency partners in Ontario.
CanLearn is Canada’s trusted source of interactive and comprehensive information and services designed to help individuals save, plan and pay for lifelong learning opportunities. The CanLearn site was developed by the Department of Human Resources and Skills Development Canada in collaboration with provincial and territorial governments and Canadian learning and career development organizations.

Youth.gc.ca is a Government of Canada website providing youth with 24-hour access to information about a wide variety of topics including finding a job, planning a career, researching education, managing your money and living a healthy life.

The Labour Market Group of Renfrew and Lanark, a satellite of the 1000 Islands Region Workforce Development Board, facilitates community based projects that will improve workforce conditions in the Renfrew and Lanark County Region and provides access to a wide variety of labour market information across multimedia platforms.
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www.renfrewlanarkcareers.com