

The 'Engineering Team' in Canada

THE WORDS 'Engineer' and 'Engineering' have many different meanings and implications around the world, and even within Canada. This document explains how the terms are most commonly used and understood within the Engineering Sector in Canada.

Engineering, like most other professions in Canada, is regulated by provincial law. The role of regulation is to protect the health, safety and welfare of the public and to protect the environment. Some members of the Engineering Team must be licensed to practice their profession or trade, while others must have permission to use specific titles.

Members of the Engineering Team – Tradespersons, Technicians, Technologists, Engineers – work closely with each other daily on a wide variety of activities and projects. The following will give you an idea of the work typically done by Team members.

Professional Engineers

To practice professional engineering, to use the title Professional Engineer (P.Eng.) or use the word 'engineer' in any job title, or to make any statement that implies that an individual is permitted to practice professional engineering requires legal permission through registration or a licence issued by the provincial regulatory body. To offer professional engineering services, an individual must either:

- Be registered as a Professional Engineer with the provincial regulatory body;
- Work under the direct supervision of someone who is registered with the provincial regulatory body as a Professional Engineer or an Engineering Licensee, or
- Obtain a Limited Licence as an Engineering Licensee from the provincial regulatory body (not available in all provinces).

Professional Engineers (P.Eng.) are required by law to assume professional responsibility for the design, research and development, commissioning, and field review of construction of engineering projects.

Professional Engineers develop appropriate solutions to engineering problems through the innovative application of scientific and engineering principles. They develop and apply new technologies, promote advanced designs and design methods, and pioneer new engineering methods.

Engineering Licensees (Eng.L, others.) may offer professional engineering services as described above, within a limited scope of practice. This credential is not granted or recognized in all provinces.

Technologists & Technicians

To use the title Applied Science Technologist (AScT), Certified Engineering Technologist (CET), Professional Technologist (PT) – use of these titles varies among the provinces – or Certified Technician (CTech), you must have legal permission from the provincial regulatory body.

AScTs, CETs, PTs and CTechs may offer non-regulated engineering and technical services directly to the public but must work under the supervision of a Professional Engineer when providing professional engineering services to an employer or the public. Registration as an AScT, CET, PT or CTech is required to perform some non-regulated engineering work. (Qualifications for PT may vary among provinces).

Applied Science Technologists, Certified Engineering Technologists and Professional Technologists apply theoretical and practical methods to design, plan, develop, test, manufacture, construct, install, commission, operate and maintain engineered products, processes, systems and services.

Certified Technicians apply theoretical and practical methods to assist with the design, development, manufacturing, testing, construction, installation, commission, operation and maintenance of engineered products, processes, systems and services.

Tradespersons

Red Seal and **Certified Journeypersons** may offer regulated technical services directly to the public under licence.

Journeypersons and **Certified Tradespersons** apply practical methods to manufacture, construct, commission, install, operate and maintain engineered products, processes, systems and services. They apply highly developed manual skills to primarily craft-related occupations.

Pathways in Engineering

The Disciplines

The discipline names below are convenient descriptions for general fields or areas of study and/or practice which engineering-related professional and regulatory agencies in Canada have chosen to recognize, allowing them to more easily categorize their memberships. Practitioners generally seek education and training within these broad areas, but may well combine two or more if specialized expertise is needed. The Trades tend to use job functions as their discipline names, while Engineering and Technology discipline names are usually related to educational program titles.

There are close general parallels between the Discipline names for Engineering and Technology, but they do not always match: some disciplines in Engineering may have different names in Technology. For example, Electrical Engineering includes the field of electronics, but Electronics Technology is recognized separately from Electrical Technology.

ENGINEERING DISCIPLINES ... as defined by Engineers Canada

- Agricultural
- Biochemical
- Biomedical
- Biosystems
- Chemical
- Civil
- Computer Engineering
- Electrical Engineering
- Environmental
- Forest
- Geological
- Geomatics
- Industrial
- Marine Petroleum
- Mechanical Physics
- Metallurgical
- Mining & Mineral Processing
- Naval Architecture
- Software Engineering
- Structural

TECHNOLOGY DISCIPLINES... as recognized by most provincial technologist associations

- Bioscience
- Building
- Chemical
- Civil
- Electrical
- Electronics
- Geomatics
- Information
- Industrial
- Instrumentation
- Mechanical
- Mineral
- Petroleum
- Renewable Resources

TRADES ... as defined by the Interprovincial Red Seal Program

There are 49 nationally recognized and certified '**Red Seal**' trades with others recognized in each province. Typical Engineering Team Red Seal trades include...

- Automotive Service Technician
- Boilermaker
- Carpenter
- Construction Electrician
- Electronics Technician
- Heavy Duty Equipment Technician
- Industrial Mechanic
- Plumber
- Power Line Technician
- Sheet Metal Worker
- Tool & Die Maker
- Truck & Transport Mechanic

Qualifications and Experience

Credential	Title and Practice Restrictions	Education and Training required after Secondary/High School			Required Work Experience
		Approx. Duration including Work Experience	Typical Classroom Contact Hours and Credential	Typical Education Content/Focus	
Professional Engineer: P.Eng.	Restricted Title and Practice Licence Required	8 years	4,000 hours University-level Bachelor's Degree	Theoretical, Academic, Technical, Business	4 years, with 1 year of supervised Canadian Engineering-level experience
Applied Science Technologist: AScT Certified Engineering Technologist: C.E.T. Professional Technologist: PT	Restricted Title Registration Required for Some Practice	4 – 5 years	2,000 hours Diploma of Technology	Theoretical, Academic, Technical, Business	2 years, with 1 year of supervised Canadian Technologist-level experience
Certified Technician: CTech	Restricted Title Registration Required for Some Practice	3 – 4 years	1,000 hours Certificate of Technology	Academic, Technical, Business	2 years, with 1 year of supervised Canadian Technician-level experience
Journeyman or Certified Tradesperson	Some Trades Regulated License may be Required	4 years	Up to 1,000 hours, usually through Apprenticeship. Journeyman Tradesperson	Technical and Work-Based	Up to 6,000 hours, supervised by a Journeyman