



Professional Engineers  
and Geoscientists of BC  
www.apegbc.ca

## Satisfactory Engineering Experience

---

Work experience is an essential element in determining whether or not an individual is acceptable for professional registration/licensing. The responsibility for providing the proper environment, opportunities, range and progression of activities necessary to meet the work experience requirements rests with the employers of applicants, and the individuals who provide supervision during the internship period.

Acceptable engineering work experience must include the application of theory and should provide exposure to, or experience in the following broad areas: practical experience, management, communication, the social implications of engineering and sustainability. Assessment of the acceptability of the work experience is based on the extent to which the applicant's experience includes these areas, each of which is outlined in the following sections.

### 1) Application of Theory

The skilful application of theory is the hallmark of quality engineering work, and an applicant's experience shall include meaningful participation in one or more of the following:

#### a) **analysis**

for example: scope and operating conditions, feasibility assessment, safety and environmental issues, technology assessment, and economic assessment, etc.;

#### b) **design and synthesis**

for example: functionality or product specification, component selection, integration of components and subsystems into larger systems, reliability and maintenance factors, human and environmental aspects, and the societal implications of the product or process, etc.;

#### c) **testing methods**

for example: devising testing methodology and techniques, functional specification verification, and new product or technology commissioning and assessment, etc.; and,

#### d) **implementation methods**

for example: technology application, engineering cost studies, optimization techniques, process flow and time studies, quality assurance implementation, cost/benefit analysis, safety and environmental issues and recommendations, and maintenance and replacement evaluation, etc.

### 2) Practical Experience

Practical experience allows applicants to understand the practical limitations of real systems. Practical experience should include:

- a) site visits to existing engineering works, with opportunities to see equipment and systems in both operational and maintenance circumstances;

- b) application of equipment as part of the larger system, including, for example, the merits of reliability, the role of computer software, and understanding the end product or engineering work in relationship to the equipment;
- c) opportunities to experience and understand the limitations of practical engineering and related human systems in achieving desired goals, including limitations of production methods, manufacturing tolerances, performance minima, maintenance philosophies, etc.; and,
- d) opportunities to experience the significance of time in the engineering process, including workflow, scheduling, equipment wear-out and replacement scheduling, etc.

### **3) Management of Engineering**

Management of engineering works includes the supervision of staff, project management, general exposure to an engineering business environment, and the management of technology.

Engineering management includes:

- a) planning, from conception through to implementation. This includes: needs assessment, concept development, assessment of resources required, and assessment of impacts, including societal and project implementation;
- b) scheduling, from establishing interactions and constraints, developing activity or task schedules, and allocation of resources, through to the assessment of delay impacts and beyond to broader aspects, such as interactions with other projects and the marketplace;
- c) budgeting, including the development of preliminary and detailed budgets, identifying labour, materials and overhead, risk analysis, life-cycle analysis, and tracking;
- d) supervision, including leadership, professional conduct, organization of human resources, team building, and management of technology;
- e) project control, including co-ordination of work phases, tracking and monitoring costs and progress, and implementing changes to reflect actual progress and needs; and,
- f) risk-analysis related to operating equipment and system performance, product performance evaluation, and evaluation of societal and environmental impacts.

### **4) Communication Skills**

Developing and practising communication skills is an essential experience requirement. This applies to all areas of the work environment including communication with superiors, colleagues, regulators, clients, and the public.

Applicants should have regular and progressive opportunities to participate in:

- a) preparation of written work, including day-to-day correspondence, record-keeping, and report writing;
- b) making oral reports or presentations to colleagues, supervisors, senior management, and an exposure to, or participation in, reports to clients and regulators; and,
- c) making public presentations.

## 5) **Social Implications of Engineering**

The overriding objective of the “social implications of engineering” requirement is to provide experience which increase awareness of an engineer's professional responsibility to guard against conditions dangerous or threatening to life, limb, property, or the environment, and to call any such conditions to the attention of those responsible.

The social implications of engineering are an important aspect of the practice of engineering. The work environment should provide opportunities for applicants to heighten their awareness of the potential consequences of engineering work. This should include:

- a) a recognition of the value and benefits of the engineering work to the public;
- b) an understanding of the safeguards required to protect the public and methods of mitigating adverse impacts;
- c) an understanding of the relationship between the engineering activity and the public;
- d) a demonstrated interest and involvement in the broader social implications of engineering;
- e) an appreciation of the role of regulatory bodies on the practice of engineering; and,
- f) an understanding of the provincial health and safety of the workplace legislation.

## 6) **Sustainability**

The Association of Professional Engineers and Geoscientists of British Columbia is committed to integrating sustainability principles and practices into engineering and geoscience professions in the province of B.C.

All applicants, Engineers-in-Training, Geoscientist-in-Training and members are expected to:

- a. Maintain a basic awareness of the principles of sustainability. The Association's web site contains several sources of information on this subject.
- b. Be aware of any specific sustainability clauses that have been added to practice guidelines that apply to their area.
- c. To the extent possible, recognizing their position of influence, consider how sustainability principles could be applied and promoted in their specific work.
- d. Support opportunities to form partnerships with others, such as government and public bodies, educational institutions and other professional associations, to expand the global networks that seek to embed sustainability concepts in society as a whole.

## 7) **Sponsorship**

Referees provide confirmation of the candidate's experience. References are required from practicing professional engineers familiar with details of the candidate's work during the internship. Present and past direct supervisors are the most suitable referees. If a candidate claims experience from several positions, extra references may be required.

All candidates are required to nominate four or more Canadian and/or US referees. All should be professional engineers with first-hand knowledge of the candidate's work. At least two of the referees should have directly supervised the candidate and at least one professional engineer familiar with the candidate's work from outside his or her company should be nominated if possible. If experience outside Canada/United States must be verified, additional referees are required. A separate letter is required to explain if the candidate cannot nominate the required referees. Professional engineers with indirect knowledge of the candidate's work may be nominated if absolutely necessary. Please refer to the reference forms for more information.

## **8) Requirement for Experience in a Canadian Environment**

Within the four-year minimum satisfactory engineering work experience requirement, all applicants are required to gain at least one year of satisfactory engineering work experience in a Canadian Environment\*, under the direct supervision of a Canadian Professional Engineer from the discipline of engineering demonstrated in the experience. Where appropriate, the direct supervision of an engineer licensed by a State Board in the United States will be accepted, or other supporting referees/references that is at Council's discretion to accept as equivalent.

This is to ensure that applicants have demonstrated that they have had experience of a satisfactory depth and breadth; and that they are conversant with the applicable Canadian engineering laws, practices, standards, customs, codes, conditions and climates.

In exceptional circumstances, a candidate with less than one year of satisfactory engineering experience in a Canadian Environment may be deemed, at the discretion of Council, to have satisfied the requirement. Each case will be assessed on its own merits.

All applicants **must** demonstrate that their Canadian Environment experience:

- 1) is supported by the undergraduate and/or postgraduate academic formation of the applicant;
- 2) is supported by a minimum of two Canadian and/or U.S. Professional Engineer referees/references from the discipline of engineering demonstrated in the experience, and who have detailed knowledge of the work of the applicant; or supporting referees/references that is at Council's discretion to accept as equivalent;
- 3) is broad-based and at the level of complexity and responsibility that demonstrates that the applicant is ready to accept the full professional responsibility held by registered professional engineers, and has reached the level of professional maturity needed to judge when he/she is out of his/her area of competence. This includes the application of engineering principles at a satisfactory level, adhering to the requirements for all applicants as set out in the Engineers Canada **Guideline on Admission to the Practice of Engineering in Canada**: [http://engineerscanada.ca/e/files/guideline\\_admission\\_with.pdf](http://engineerscanada.ca/e/files/guideline_admission_with.pdf) and/or the discipline-specific requirements established by Council, where applicable.

*\*The term “Canadian Environment” is defined as:*

- work experience obtained in Canada, supervised by a professional engineer, registered or licensed in the applicable Canadian jurisdiction; or,*
- work experience acquired outside Canada, where applicants demonstrate a good knowledge of local Canadian engineering laws, practices, standards, customs, codes, conditions and climates.*