



Registration

● Guideline

■ Evaluation of Professional Engineering or Geoscience Experience Gained by University Professors

PURPOSE

This document defines those activities performed by an educator that are acceptable engineering experience for the purpose of qualifying experience that fulfills APEGBC's Satisfactory Engineering or Geoscience Experience Requirements.

APEGBC intends this document to be used by both:

- The applicant to analyze their experience and whether it is acceptable engineering experience; and
- The Association to evaluate an applicant's experience and whether it is acceptable engineering or geoscience experience.

This document is to work in conjunction with APEGBC's Satisfactory Experience Guidelines, Discipline-Specific Experience/Competency Guidelines, Post-Graduate Degree Experience Credit Policy and Experience Credit for Teaching Experience Policy.

CREATED

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GUIDELINE

A. Introduction:

Successful applicants in this category will demonstrate the practical application of their engineering or geoscience knowledge through their research and academic work. It is possible for an applicant in this category to obtain the necessary experience from within the academic realm to be registered and the onus is on the applicant to demonstrate their meaningful practical experience and application of knowledge. Applicants in this category must meet APEGBC's satisfactory experience guidelines to be registered. If professional competency guidelines exist for the Applicant's discipline, these will be used in the assessment. Such guidelines provide for a more fair and objective measure of the applicant's qualifications.

Research, both pure and applied research, requires applicants to do such things as:

- identify opportunities for research,
- plan for and design the research,
- perform the research where appropriate,
- communicate the results of research where appropriate, including publishing papers, speaking at conferences and written and oral communication of results to industry if applicable,
- and identify commercial opportunities for the outcomes of research and where appropriate to collaborate to implement research for practical use.

In assessing an applicant, whether the candidate is self-assessing or being assessed by another, it is important to remember that for candidates in this area, it is a combination of research/academic work and teaching experience that will qualify an applicant to be registered with APEGBC. Applicants must to seek out contact with industry and, where possible, see projects through from the inception to the construction phases or consult on the project itself. However, this is not required for

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registration if an applicant can meaningfully demonstrate how their work experience meets the APEGBC requirements. Furthermore, applicants can demonstrate meaningful application of theory, practical experience and an understanding of the social implications of engineering requirements¹ through research and academic work which is performed with a view to developing future application of that research and work.

Note: The teaching of subjects where there is no application of engineering principles is not considered appropriate engineering experience for registration. This may include the teaching of first- and second-year university courses and community college courses.

Note: Applicants who fall under this category are reminded that their experience must be supported and verified by at least four referees who cover as much work history as possible, with a minimum of four years. Referees must be Professional Engineers or Geoscientists, registered in Canada or the United States, or equivalent country, and with first-hand knowledge of the Candidate's work. Candidates are reminded that at least 2 referees should have directly supervised the candidate and at least one referee must be from outside the candidate's work, or place of study if applicable.

B. Requirements

Research Opportunities

- Identify opportunities for new, improved or adapted engineering or geoscience concepts, processes, technologies or products
- Document these opportunities
- Determine justification for research including such things as desired or required outcomes, problems or risks that need addressing or benefits to or tangible outcomes for the field of engineering
- Identify the risks of pursuing or rejecting an opportunity

Resources Required for Research and Development

- Determine research objectives including results sought, research deliverables and time-lines
- Develop cost estimates to perform research where appropriate including development, design, methodology, research and analysis
- Develop cost estimates for implementation of research findings where appropriate

Concept Development

- Determine and document preliminary objectives and priorities to be addressed by the research, including working from principles and predicting outcomes where appropriate
- Collaborate with interested parties, including industry who might contribute to or benefit from this research, and enable them to express their interest and perspectives
- Where appropriate, incorporate parties' interest into the research scope, priorities and objectives
- Analyze the impact of emerging engineering or geoscience methods, technologies, processes and hypotheses to refine the research, and development if applicable, concept
- Scope the research to develop objectives for both results and time-lines



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Sourcing Commitment to the Research

- Initiate, develop and maintain contact with industry and other supporters of research such as university officials and government to gain in-kind and financial support for research efforts
- Demonstrate peer esteem from industry
- Identify commercial opportunities for research application where appropriate
- Communicate commercial opportunities for research application where appropriate
- Prepare formal application for research funds including preparation of supporting documents

Communication and Management Skills

- Communicate ideas, methods, and results to interested parties through such things as oral and written reports and presentations
- Seek advice, where necessary, to supplement own knowledge and experience
- Make contact with industry to identify opportunities for research and ways to address practical needs
- Develop working relationships within the academic community to support research efforts
- Read literature and analyze, comprehend, and apply knowledge
- Demonstrate the ability to effectively work in a team
- Be responsible for making decisions on part or all of one or more complex engineering activities
- Supervise all or part of engineering or geoscience activities, research or academic work including demonstrating leadership, professional conduct, manage team resources and technology and perform team-building if possible

Undertake Research

- Establish research, and development, project management
- Identify the research focus, conduct tests and identify information for general application
- Demonstrate application of engineering or geoscience principles
- Measure and record research project parameters with regard to developed priorities, objectives and timelines
- Communicate and monitor research, and development, progress with collaborators
- Record results
- Analyze recorded results and develop conclusions
- Where appropriate, draw conclusions as to possible practical application
- Communicate results through reports on analysis, significance to engineering and engineering problems, possible practical application and so on
- Where appropriate, prepare demonstrations of the research outcomes

Collaborate for Commercialization of the Outcomes

- Collaborate with interested parties to review the costs and benefits of research
- Provide recommendations for the implementation and commercialization of research where applicable
- Consult on projects in which research and development is being implemented
- Provide engineering advice on specific aspects of commercialization such as regulatory or legal requirements, pricing, distribution, promotion etc.



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Research Outcomes and Commercialization

- Consult with interested parties to transfer new technology into commercial production
- Contribute to the planning process to introduce new technology into commercial production
- Identify and analyze approaches, or collaborate on identifying and analyzing approaches, to managing technical problems with the commercialization of outcomes
- Assess or collaborate on assessing the risks and benefits of the commercialization of outcomes
- Develop, collaborate on or advise on a risk minimization plan
- Identify practical considerations/limitations or implications that will constrain the application of the research concept, or identify the practical details necessary for implementation

Environmental and Sustainability Considerations

- Identify where sustainability can drive innovative, improved, and adapted research and development opportunities
- Conduct research scoping under the direction of environment management requirements
- Develop a research and development concepts in relation to environmental and sustainability needs
- Undertake research with regard to environmental rules, regulations and considerations
- Undertake research with regard to ethical considerations and sound engineering or geoscience judgment
- Identify environmental and sustainability needs in the commercialization of research outcomes

CROSS REFERENCES

ⁱ see the satisfactory experience guidelines - <http://www.apeg.bc.ca/reg/docs/satisfactoryengworkexpguidelines.pdf>