



Appendix 6

Guidelines for the Preparation and Review of Applications in Engineering and the Applied Sciences

Engineering is concerned with the application of knowledge for practical purposes, wealth creation and quality of life. It is recognized that engineering is very broad and includes a wide range of research areas. Research in engineering ranges from the creation of fundamental new knowledge through to novel design or innovative approaches to improve existing processes, products and services capable of major improvements in performance. The same is often true for research in the applied sciences.

The indicators of excellence in and contributions to research in engineering and the applied sciences reflect the different nature of that research and may be significantly different from those in the natural sciences. Specific guidelines have been issued by NSERC for use by the research community in preparing applications and by selection committees and panels that review applications in these areas.

All NSERC research programs include among their selection criteria:

- the excellence of the applicant and any co-applicant; and
- the merit of the proposal.

The following guidelines address these two criteria with respect to engineering and the applied sciences. It should be remembered that there are other criteria which must also be addressed. Refer to the Review Procedures and Selection Criteria for the applicable program.

The Excellence of the Applicant(s)

The assessment of excellence is based on the expertise and track record over the past six years of the applicant and co-applicant(s), focusing on their contributions to and impact on the field and profession. In the case of new researchers, less emphasis is placed on their track record; however, it is important that their potential for research be clearly demonstrated in the application.

Significant Research Contributions and Practical Applications

Contributions in engineering and the applied sciences may take the form of any of the following. All applicants are expected to demonstrate excellence in these contributions:

- **Dissemination of knowledge through the open literature:** refereed journal publications, conference proceedings, monographs, and books.
- **Evidence of specific application of knowledge and improvements to current practices:** improvements in products, processes, services, designs,



transfer of knowledge through technical and internal reports on new processes to practitioners, work on the establishment of national and international standards, work incorporated into a recommended practice or code.

- **Evidence of the creation of novel products, processes and services that are or may become useful to society:** patents, technical licensing, technological innovation (e.g., the creation of computer software packages, development of new genetic lines from plant or animal breeding, development of innovative technology that is being implemented at commercial or industrial scales), innovative formulation of operational principles for the design of practical processes, development of viable spin-off companies, and joint ventures.
- **Other evidence of contributions to the profession or impact on the field:** membership on committees that influence the direction of the field and the profession (e.g., code, selection committees, advisory boards, boards of directors, and professional boards and committees), research interactions resulting from collaborative projects, contributions to national or regional development, evidence of strategic management and planning, consulting, and research leave spent in industry, government or business.

Committees will assess the contributions as they relate to:

- quality;
- significance;
- innovation;
- relevance to the proposal;
- impact or potential impact on the industry, profession or society.

Many contributions to industry or other end-users take the form of **technical and internal reports**, some of which may be confidential to protect proprietary information. In such cases, the user of the contribution may write a letter to attest to its importance and cover the above aspects. Whether or not such a letter is provided, applicants should give the report title, the name of the recipient, the date submitted, a concise description including a summary of the results acceptable to the research partner, and an explanation of the technical significance of the work. Describe the importance of the industrial contribution in terms of the novelty and innovation of the research as opposed to the simple provision of a service, and explain how the work is related to the NSERC proposal.

Applicants should document the above information on the Personal Data Form (Form 100), making the strongest possible case in the space provided.

2. The Merit of the Proposal

This criterion is a composite of the following factors:

- originality;
- anticipated significance;



- clarity of long- and short-term objectives;
- suitability of proposed methodology;
- feasibility.

The major emphasis in engineering and applied sciences proposals is on the degree of innovative content of the research program or design activity and the potential to make a significant contribution to the field. Consideration is given to the potential for technological impact and the degree to which the proposal addresses present or future socio-economic needs. Applicants should discuss the importance of the specific problem being addressed and the potential applications of the research.