NSERC Presentation
September 2012

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Electrical and Computer Engineering
1510 ECE Discovery Grants Committee (2008-2012)
Based on experience (Electrical and Computer Engineering committee for the NSERC Discovery Grants)

Had exposure to Mechanical Engineering and Physics committees
  Found to be similar.

Just observations, not an endorsement of the procedure

My personal thoughts/feelings - Discovery grant applications.

To improve
  Chances of having successful proposals
  And/or increasing award value

Note the graphs at the end are taken from some of my own data
  ~55 grants as either a 1st, or 2nd reviewer or as a reader

**DO NOT TAKE** numbers literally
  Use as a guide. Note the large error bars on almost all categories.
Discovery Grants Committee Observations

- Discovery Grants ranking is divided into 3 (supposedly) equally weighted categories:
  - Excellence of the Researcher
  - Merit of the proposal
  - Training of HQP (Highly Qualified Personnel)

- There are six rankings for each category:
  - Exceptional
  - Outstanding
  - Very Strong
  - Strong
  - Moderate
  - Insufficient.
Discovery Grants
Committee Observations

General comments

- It “has been suggested” that the “Strong” category represented the average in any and all of the categories.
- A Moderate or Insufficient in any of the categories would make funding, at any level, questionable,
  - i.e. if you get a Moderate/Insufficient (any category) - highly unlikely you would be funded

 Depends on

- Funding for a given committee (not uniform)
- How the funding is applied to the distribution of ranking
- Ranking in the 3 categories are tabulated, once again with equal weighting, and a distribution of “bins” is created.
- The money from the committee is then applied to the distribution and all applicants in the same bin (were supposed to) receive the same funding.
Excellence of the Researcher

Although the use of impact numbers (i.e. the ISI H-factor) is discouraged by NSERC, it was mentioned often and used as a general measure of the applicant’s excellence.

Most important issues:

- **Journal publications**
  - Impact of the journal is very important.

- **Conference publications**
  - Still important, but perhaps not as important as journal papers - ½ or 1/3 the value of a good journal publication. Impact is important

- **Others**
  - Include all awards, fellowships, invited papers, paper awards, Invited talks or seminars
  
  (Note: Those at you own University will not likely carry a lot of weight.
  
  With all papers, the placement of the applicant in the author list was also discussed –
  
  First – very important – his own work etc.
  
  Last – students work – very important! Make sure you highlight student/post doc authors.
  
  In the middle – this often caused some great discussion Explain it!
  
  Patents important too – but explain the contribution – when it was filed, when it was issued.
Discovery Grants
Committee Observations

Merit of the proposal

- Be as clear and concise as possible.
- Describe the student’s role in all themes or projects within the “research program” explicitly – even if they are not current.
- Do not leave the HQP discussion to the last page of the Form 101.
- Make sure the short and long term goals are very clear –
  - Deliverables of some sort are always good –
  - Describe in detail interaction with collaborators
  - Industrial collaborations get big marks.
  - Not only what you are doing, but how you will do it
- References (NOT all your own) - suggest not even the majority should be your own.
- As for the technical content, that is difficult to judge and is very area dependent.
  - “Incremental” research was sometimes discussed but there was no consensus as to whether this was a good thing – i.e. building on strength – or a bad thing – just doing the same old thing.
- Remember NSERC funds “programs” not “projects”.
  - A few 3-5 projects is good;
    - fewer sounds like a project,
    - more ~ a feeling of overreaching
**Discovery Grants Committee Observations**

**Training of HQP (Highly Qualified Personnel)**

- Cannot over stress the importance of this section.
  - Numbers are important but their training is as or more important.

- List all your students, get them to sign the NSERC form and list their names
  - A whole page of “name withheld” does not look good

- Be specific about where they went
  - If they went to MIT or somewhere important say it explicitly
  - If they went to you at a great company or facility – mention it explicitly.
  - Do not just leave it up to the one table on the form 100. A sentence or two to explain where they went will help.

- Be specific about training
  - Collaborations with other labs
  - Training and how it related to the job environment

- Mention their involvement explicitly in the projects and the program.

- Do not leave it to ONLY the single page form

- The general feeling I had was for most Applicants, except for early career or special circumstance, 1-2 M.Sc. and 1-2 PhD is about average and might be viewed as a minimum.

- If you have only M.Sc. and no Ph.D. students this could raise a red flag.
Applications by “Quality Bin”

Figure 8. Distribution of Applications\(^1\) by Quality Bin

a) 2012 Competition

b) 2009-11 Competitions

\(^1\) Does not include results for Subatomic Physics
## Discovery Grants - Statistics

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<tbody>
<tr>
<td></td>
<td>Large (&gt;30k)</td>
<td>Medium (15-30k)</td>
<td>Small (&lt;15k)</td>
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<tr>
<td>Early-career researchers (ECR)</td>
<td>Success Rate</td>
<td>62%</td>
<td>61%</td>
<td>59%</td>
<td>66%</td>
<td>62%</td>
<td>61%</td>
<td>59%</td>
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<td>62%</td>
<td>61%</td>
<td>59%</td>
<td>66%</td>
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<td></td>
<td>Total Amount</td>
<td>$5,604,736</td>
<td>$1,329,000</td>
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<td></td>
<td>Average Grant</td>
<td>$27,207</td>
<td>$25,558</td>
<td>$25,930</td>
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<td>Established Researchers (ER-R) (Renewals)</td>
<td>Success Rate</td>
<td>83%</td>
<td>76%</td>
<td>78%</td>
<td>81%</td>
<td>69%</td>
<td>69%</td>
<td>52%</td>
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<td>63%</td>
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<td>Average Grant</td>
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<td>Established Researchers (ER-NHG) (Not holding grant)</td>
<td>Success Rate</td>
<td>37%</td>
<td>35%</td>
<td>38%</td>
<td>42%</td>
<td>36%</td>
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<td>33%</td>
<td>18%</td>
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<td>Average Grant</td>
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2012 Competition Statistics

Electrical and Computer Engineering

Fraction of Applications

Quality Bin

- Funded ER
- Successful ER
- Funded ECR
- Successful ECR
- Bin Value

Bin Value ($ Thousands)
2010 Competition Statistics

<table>
<thead>
<tr>
<th>Electrical and Computer Engineering (1510)</th>
<th>Early Career Researchers</th>
<th>Established Researchers</th>
<th>Overall</th>
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<tbody>
<tr>
<td>Number of Applications</td>
<td>31</td>
<td>159</td>
<td>256</td>
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<tr>
<td>Number of Awards</td>
<td>22</td>
<td>121</td>
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<td>Amount Awarded</td>
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<td>Success Rate</td>
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<td>76.10%</td>
<td>63.30%</td>
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<tr>
<td>Average Grant</td>
<td>$23,727</td>
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Questions/comments?