2010 NSF GRFP Applications

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NSF Graduate Research Fellowship Program (GRFP)

- Program Solicitation *NSF 09-603*
- 1654 NSF GRF awards expected depending upon funding
  - Up to 2008: approximately 900 awards given
  - 2009: 1236 awards given
- Deadlines vary—Engineering deadline: Nov. 12

Fellowship benefits

- 3 years usable over a 5-year period
- $30,000 stipend for a 12-month tenure period
- $10,500 cost of education allowance per tenure year
- one-time $1,000 International Research Travel Allowance (planned travel ≥90 continuous days)
- access to cyberinfrastructure resources via the TeraGrid (Honorable Mention recipients also eligible for 1-year)

NSF GRFP Eligibility: 3 Criteria

- U.S. citizens, nationals, or permanent resident aliens.
- Typically eligible to apply:
  - Level 1:
    - During the senior year
    - After graduation but prior to entering graduate school
  - Level 2:
    - During the 1st year of graduate school
  - Level 3:
    - Prior to completion of 1st term of 2nd year of graduate school
  - Level 4:
    - Significant change of field, graduate study interruption (more than 2 years) in for financial, family or medical reasons
- Proposed study in NSF–supported STEM areas

NSF GRFP Applications

- FastLane Application Module
  - Personal Profile
  - Education & Work Experience
  - Planned Graduate Program
  - Personal Statement*
  - Previous Research Experience*
  - Proposed Plan of Research*
- Official Academic Transcripts
- GRE General & Subject Test Scores (Optional)
- 3 Letters of Reference (due Dec. 1)

*essays up to 2 pages in length

2009 NSF GRFP Overall Applicant Statistics:

Field	No. Applicants	% Total
Chemistry	667	7.1%
Computer & Inf. Sci. & Engr.	470	5.0%
Engineering	2463	26.4%
Geosciences	326	3.5%
Life Sciences	2836	30.3%
Mathematical Sciences	242	2.6%
Physics & Astronomy	502	5.4%
Psychology	749	8.0%
Social Sciences	1092	11.7%
TOTAL	**9347**	**100%**

1236 awards to fields were based upon % of total applications

2009 NSF GRFP *Selected* Applicant Statistics:

Panel	Level 1	Level 2	Level 3	Level 4	Subtotal	% of All
Aerospace Engineering-Others	112	90	65	12	279	3.0%
Bioengineering	177	242	161	28	608	6.5%
Chemical Engineering	96	137	75	12	320	3.4%
Civil Engineering	93	83	83	15	274	2.9%
Computer Science	143	124	167	36	470	5.0%
Electrical Engineering	92	102	90	18	302	3.2%
Materials	69	112	57	14	252	2.7%
Mechanical Engineering	134	157	122	14	427	4.6%
Female All					4910	52.5%
Disability All					262	2.8%
All Applicants					9347	100.0%
All Awards					1236	13.2%

2009: Panelist requested to identify research proposals on energy & nat. security

NSF GRFP Panelists…

- Meet in Washington (~ Feb.) to read/rank applications
- Examine all *available* information in the applicants' files
- Rate applications using NSF's 2 Merit Review Criteria: IM/BI
- Place applications into 4 Quality Groups I, II, III & IV:

I:	top ~7%	All NSF GRF recipients
II:	next ~13%	~1/3rd NSF GRF recipients, NSF selects; remainder Honorable Mention recipients
III:	next ~6%	Honorable Mention recipients
IV:	bottom ~75%	Neither NSF GRF nor Honorable Mention recipient

Top ~10% NSF GRF; Next ~15% Honorable Mention

2009 NSF GRFP Mechanical Engineering Panel:

- 414 Applicants
- 29 Panelists
  - 16 male, 13 female
  - ~ 70% from R1 (research–intensive) institutions
  - Each typically reviewed 40 applications (although ranged between 30 and 65)
  - **~15 minutes per read**
- All applications read by 2 RANDOM panelists (w/o CoI's) & ranked by average z-score
- 65% applications "retired" after 2 reads
- 35% + applications get 3rd read

Applicant Rating Sheet

Rating sheets missing a required element will be returned to the panelist for completion. **APPENDIX III**

NSF Graduate Research Fellowship Program

APPLICANT RATING SHEET

Applicant:
Panel:

Intellectual Merit Criterion

Demonstrated intellectual ability and other accepted requisites for scholarly scientific study, such as the ability (1) to plan and conduct research; (2) to work as a member of a team as well as independently; and (3) to interpret and communicate research findings.

Overall Assessment of Intellectual Merit ☐ Excellent ☐ Very Good ☐ Good ☐ Less Good ☐ Fair

Mandatory - explain assessment to the applicant:

Broader Impacts Criterion

Contributions that (1) effectively integrate research and education at all levels, infuse learning with the excitement of discovery, and assure that the findings and methods of research are communicated in a broad context and to a large audience; (2) encourage diversity, broaden opportunities, and enable the participation of all citizens--women and men, underrepresented minorities, and persons with disabilities--in science and research; (3) enhance scientific and technical understanding; and (4) benefit society.

Overall Assessment of Broader Impacts ☐ Excellent ☐ Very Good ☐ Good ☐ Less Good ☐ Fair

Mandatory - explain assessment to the applicant:

Reviewer comments to the applicant on this rating sheet should be constructive and reflect the two NSF merit review criteria. Applicants will be able to view a copy of their rating sheets without the name of the reviewer on a secure web site. Maximum protection will be given to the reviewer's identity subject to the policy stated above and the Freedom of Information Act, 5 USC 552.

Applicant ID	Panelist ID	Rating
	place panelist label here	

11620

Signature _____ Date _____

Evaluation based upon NSF's 2 Merit Criteria

Rating score from 1-50: 1=lowest; 50=highest

Intellectual Merit Criterion

...includes demonstrated intellectual ability and other accepted requisites for scholarly scientific study, such as the ability:

- to plan and conduct research;
- to work as a member of a team as well as independently;
- to interpret and communicate research findings.

Intellectual Merit Criterion

Panelists are instructed to consider applicant's:

- academic record strength;
- proposed plan of research;
- description of previous research experience;
- references;
- GRE General and Subject Tests scores;
- choice of institution relative to the proposed plan for graduate education;
- *potential to complete research-based graduate program;*
- *potential to produce scholarly work;*
- *potential to meet the scientific and technological workforce need;*
- *ability to interpret and communicate research findings;*
- *potential to work in interdisciplinary teams.*

Broader Impacts Criterion

… includes contributions that:

- effectively integrate research and education at all levels;
- infuse learning with the excitement of discovery;
- assure that findings & methods of research are communicated in a broad context and to a large audience;
- encourage diversity, broaden opportunities and enable *full* participation;
- enhance scientific and technical understanding;
- benefit society.

Broader Impacts Criterion

Panelists are instructed to consider applicant's:

- background, including personal, professional, and educational experiences;
- stated potential to fulfill the broader impacts criterion;
- *demonstrated sensitivity to diversity and inclusiveness;*
- *intention to enhance scientific and technical understanding;*
- *prospect to benefit society.*

NSF GRFP Application Statements

Three VERY IMPORTANT essays:*

- Personal Statement
- Previous Research Experience
- Proposed Plan of Research

that faculty members who are working in the area and that have (or have had) NSF funding are best able to assess and provide guidance in writing.

*relative importance of each varies with the reviewer

NSF GRFP Application Statements

"The essays must be written using standard 8.5" x 11" page size, 12-point, Times New Roman font, 1" margins, and must be single spaced or greater. The Personal Statement, Previous Research Experience, and Proposed Graduate Study essays have a maximum length of two pages, including all references, citations, charts, figures, and images. …Failure to comply with these requirements could eliminate the application from consideration by review panels."

Program Solicitation *NSF 08-593*

Personal Statement:

- Describe any personal, professional, or educational experiences or situations that have prepared you or contributed to your desire to pursue advanced study in science, technology, mathematics, or engineering.
- Describe your competencies and evidence of leadership potential.
- Discuss your career aspirations and how the NSF fellowship will enable you to achieve your goals.

Personal Statement:

- Describe your experiences in the following, or describe how you would address the following in your professional career:
  - Integrating research & education *(e.g., participating in & encouraging discovery at various levels);*
  - Advancing diversity in science *(e.g., contributing to the participation of underrepresented groups);*
  - Enhancing scientific & technical understanding *(e.g., sharing scientific knowledge with the general community)*; or
  - Benefiting society.
- Provide specific details that address the 2 NSF Merit Review Criteria.

Personal Statement:

As a Panelist, I ask myself:

- "What's the applicant's PREPARATION & MOTIVATION for graduate study?"
- "Is there TANGIBLE EVIDENCE demonstrating sincerity of interest?"
- "How has or how does applicant plan to LEAD in GIVING BACK to society?"
- "Is there TANGIBLE EVIDENCE demonstrating sincerity of intent?"

Personal Statement:

As a very general rule, I regard:

- Past experiences & activities

…as more "authentic" than…

- Present experiences & activities

…as more "authentic" than…

- Future or planned experiences & activities.

Previous Research Experience:

- *Describe any scientific research activities in which you have participated, such as experience in undergraduate research programs, or research experience gained through summer or part-time employment or in work-study programs, or other research activities, either academic or job-related. Distinguish between undergraduate and graduate research experience*
- *Explain the purpose of the research and your specific role in the research, including the extent to which you worked independently and/or as part of a team, and what you learned from your research.*
- *List any publications and/or presentations made at national and/or regional professional meetings.*

If you have no direct research experience, describe any activities that you believe have prepared you to undertake research.

Previous Research Experience:

As a Panelist, I ask myself:

- *"Does the applicant understand previous research hypothesis, purpose & goals?"*
- *"Does the applicant cogently describe at least their portion of the research activities?"*
- *"Does the applicant understand relevant research principles & techniques used?*
- *"Does the applicant demonstrate independent intellectual maturity & reasoning?"*
- *"Does the applicant communicate their research findings, incl. impact & relevance?"*

Proposed Plan of Research:

In a clear, concise, and original statement, **present a complete plan for a research project** that you may pursue while on fellowship tenure & how you became interested in the topic. Your statement should:

- Present your plan with a clear hypothesis (or questions) to be asked by the research.
- Demonstrate your understanding of research design & methodology & explain the relationship to your previous research, if any.
- Describe how you propose to address the 2 NSF Merit Review Criteria.

Format: title, key words, hypothesis, research plan, anticipated results or findings, literature citations, and a statement attesting to the originality of the research proposal*.

*Often missing without apparent detrimental effects application ranking.

Proposed Plan of Research:

As a Panelist, I ask myself:

- "Does the applicant develop a *relevant* research hypothesis or questions?"
- "Does the applicant develop a *cogent, cohesive* research plan?"
- "Does the applicant understand *relevant* research principles & techniques?
- "Does the applicant demonstrate appropriate *intellectual maturity & reasoning*?"
- "Does the applicant communicate the *impact & relevance* of proposed research findings?"

Avoid Common Essay Pitfalls:

COMMON TO ALL ESSAYS

Placing main points/ideas towards the ends of paragraphs/essays (write most important first).
Non–navigable, non–targeted essays with lots of "throw away" words (clarity, paramount importance).
Use of jargon; under- and/or over-estimating reviewer's knowledge base.
Vagueness; lack of specificity

PERSONAL STATEMENTS

Diversity does not mean diversity of your educational and/or research program.
Simply being a member of an underrepresented group (minority, woman, disabled, 1st family member to earn a degree, working mother/father) does not address the diversity question.
Demonstrated activities is superior to future plans.

PREVIOUS RESEARCH EXPERIENCE

Description of senior design projects.
Description of co-op assignments (unless research).
Research is not going to the library and looking up documents.
Being too general/failure to state individual work, contributions & impact.

PROPOSED PLAN OF RESEARCH

List of topics only—too general.
Proposing a laundry list of several topics—it is best to focus on one research topic.
Providing a methodology that appears straightforward—no identification of **critical** issues.
Cutting out of an existing research proposal—disconnect in writing style.

NSF GRFP Application:

- Official Academic Transcripts

Academic transcripts are required for all institutions listed in the applicant module, excluding Fall 2009.

Do not try to explain away poor grades with poor excuses; in general, it just draws unnecessary attention to them (Exception: major medical and/or family crisis).

NSF GRFP Application:

- GRE Test Scores—Optional

  Only GRE scores from tests taken between Oct. 1, 2004 and Nov. 30, 2009 submitted by ETS will be accepted for the 2010 NSF GRF competition.

  If your scores are "average" to "excellent," our advice is to include them with your application. Reviewers tend to think "the worst" if they are omitted.

NSF GRFP Application:

Letters of Recommendation—3 Required

- Get letters of reference from faculty members (or full-time researchers who have Ph.D.s themselves) who LOVE you.
- Industrial letters tend to be less targeted at the evaluation criteria and shorter.
- It is a good idea to give your references either a draft of your three essays and/or a page of bullet items you believe the referees can attest to. Ideally, you distribute different pages of bullet items to your different references.
- In some cases, it might expedite the completion of your reference letter if you suggest that you would be willing to provide a draft.

NSF GRFP Application: Two Reviewer's Priorities*

Application Components	Relative Importance		Order of Review	
	Moon	Masada	Moon	Masada
Personal Profile	7	7	7	9
Education & Work Experience	7	7	8	7
Planned Graduate Program	7	7	9	8
Personal Statement	4	3	5	5
Previous Research Experience	1	2	4	3
Proposed Plan of Research	2	3	6	4
Official Academic Transcripts	5	1	1	1
GRE General Test Scores	5	6	2	2
Letters of Reference	3	5	3	6

* Illustration only; to demonstrate reviewer–to–reviewer variability

What 2008 ME panelists listed as important items

- Intellectual Merit
  - Research
  - Innovation
  - Past accomplishments
  - Academic record—GPA/ preparation
  - Passion
  - Transformative
  - Independence
  - Merit/significance
  - Research process

What 2008 ME panelists listed as important items

- Broader Impact
  - Community service
  - Part of career goals
  - Demonstrated diversity-outreach
  - Benefit to society
  - Technical linkage
  - Collaborative
  - Educational efforts (tutor, etc.)
  - Dissemination of knowledge
  - Leadership
  - Global perspective

Successful Applicants have:

- Strong—*but not necessarily perfect*—academic records
- Very competitive—*but not necessarily perfect*—GRE scores
- Extremely strong letters of recommendation—*primarily from tenure–track faculty*
- Conducted—*even planned*—"independent" research
- Clear understanding of impact & relevance of past & planned research
- Clear visions of how a Ph.D. fits into their career plans
- *Relevant* research hypotheses & *cogent, cohesive* research plans
- Demonstrable independent, intellectual maturity & reasoning
- Demonstrated leadership and plan to give back to society

Resources

Presentation slides and sample successful essays can be found at :

https://webspace.utexas.edu/moontj/IMPACT/NSF/index.htm

QUESTIONS ?