

SUGGESTIONS FOR PROSPECTIVE GRADUATE STUDENTS

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Over the years I served many times on graduate admissions committees in two different departments. I have also reviewed many grant proposals for the NSF and the NIH. Based on my experience and observations, I offer the following advice for crafting your fellowship applications and your graduate school applications. A number of my suggestions are appropriate for both purposes.

FELLOWSHIP APPLICATIONS

TIMETABLE.

Be aware of the deadlines for the fellowship program, and prepare your application materials *early*. It is especially important that you write your application essays early, so that they can be edited and critiqued. Write your essay, and put it aside for a week. When you look at it again, you will see many ways to improve the language and the clarity of your writing. You should also give your essay to a faculty member for their comments, and they should be given several days in which to respond.

AGENCY PERSPECTIVE.

I think that it is, helpful to understand the granting agency's point of view in awarding fellowships. For the most part, only students with good grades and good GRE scores apply there is considerable self-selection among students that form the candidate pool. So, you should start with the assumption that most of the applicants have a good GPA and good board scores. From that point of view, most of the applicants for a fellowship are nearly equivalent. Given that, it must be other criteria that most strongly influences the decision of the granting agency. To help you understand this, keep in mind that the granting agency is looking for students that they feel are most likely to be able to do creative, independent research, and who will likely be able to focus on their research relatively early in their graduate student career. This means that the agency will be looking for several things beyond good performance in course work and on standardized tests.

FELLOWSHIP ESSAY.

Given the perspective described in the previous paragraph, your essay is of particular importance. The more that you can focus your essay, the better. It is not necessary to have a highly specific graduate research project in mind, but it is important to have narrowed your interests to a reasonable degree. An essay describing your interest in studying perturbation theory and partial differential equations is much more effective than an essay elaborating a general interest in applied mathematics. If possible, you should give evidence in your essay of knowledge of current research trends in the field you are writing about. This does not mean that you need have mastered the

research literature - after all that is what you will do in graduate school - but you should know about general research trends and active areas. Such an essay reveals to the grant reviewer that you are more likely to get off to a good start, and already understand, to some degree, the process of research mathematics.

You should also understand that your Fellowship essay in no way commits you to doing that particular research in graduate school. Many students enter graduate school intending to work in a particular area, but change to a different area based on their experiences-a good course, a fascinating seminar, or the influence of individual professors. Granting agencies understand this fact, and do not see an essay expressing interest in a certain area as at all binding. The value of a well-written, knowledgeable, focused essay is to identify the student who is thinking ahead and anticipating the process of developing a research program.

RESEARCH OR PROJECT EXPERIENCE.

Graduate fellowships are to support research. The granting agency is seeking to maximize the impact of their support, and therefore wants to increase the *a priori* odds that the grant recipients are going to be able to do creative, independent research. If you have had research experiences while an undergraduate-and many of the students in Claremont have through REU programs, Clinic projects or senior thesis-then you need to call attention to that in your essay. You should briefly describe the research problem that you worked on, and describe the mathematics that you did in your research on the problem. If you have written any papers that have been submitted for publication, or that are in preparation and will be submitted, you should be sure to make reference to those manuscripts. There is nothing like having already done research to make the case that you are a good candidate for being able to do re- search in the future.

RECOMMENDATION LETTERS.

Your recommendation letters are very important to the grant reviewers. Carefully select the professors that you ask to write for you, and give them as much information as you can to help them write as strong a letter as possible. More specific hints about how to approach those that you want to write are listed in the following section on Graduate Admissions.

GRADUATE ADMISSIONS

APPLICATION COVER LETTER.

The cover letter to your graduate school application is more important than it may seem. Even though your application will have a narrative "statement of purpose" or something of the sort, most readers of the file will read your cover letter first. Many students simply write a *pro forma* cover letter communicating their application. Having a perfunctory cover letter will certainly not doom your application (and having a good one will not guarantee admission), but having an informative letter cannot hurt. Your letter should be tailored to the school; your letter should make it clear that you understand that school's graduate program, and indicate how their program seems to fit with your interests. If you have had a research experience, give a brief description in your cover letter, leaving the details for your admission essay. If you are aware of specific individuals in a given

graduate program that you may be interested in working with, mention that fact. It makes a good impression on the reader when it is obvious that an applicant is knowledgeable about the department and programs, so do your homework.

RESEARCH OR PROJECT EXPERIENCE.

If you have done research that has led to a manuscript that has been, or would soon be, submitted to a journal for publication, you should enclose a copy of that paper or manuscript with your application. Not too many students are in that situation, but if you are, by all means do not fail to send a copy of your work. If you are doing a senior research thesis, you should describe what your thesis project is, and what you hope to accomplish. Most of your application work will be finished in the fall semester, so it is likely that your thesis results will come later in the year, but it is helpful to describe the project that you intend to work on. Again, this gives the graduate admissions committee a sense that you plan ahead, and are already engaged in creative, independent mathematical work.

COMMUNICATION SKILLS.

Most students will serve as teaching assistants for some part of their time in graduate school. These days, many graduate departments are paying more attention to the quality of teaching by their graduate students. At the Claremont Colleges, most of our students gain significant experience preparing and delivering public presentations, and have significant writing experience. You should find a way in your application to describe your experience and skills in this regard, since such skills are relevant to teaching. Again, you will not be admitted to a good graduate school because you can give a good speech, but when everything-is weighed together, and the admissions committee has to make difficult choices between comparable students by other measures, having these other qualities and skills can make the difference.

RECOMMENDATION LETTERS.

The recommendation letters that accompany your application are vital. They are also the part of the application that you have little control over-you ask people and they write for you. This does not mean that you have no influence. First, you choose whom to ask to write. You should select people who are most familiar with your work-classwork as well as your work on out- of-class projects. When you ask someone to write a recommendation for you, and they accept, you will give him or her a copy of the forms that the school requires to be filled out. Make sure that all the parts of the form that you are responsible to complete are indeed complete. You should also give copies of the following things to each person that is writing a letter for you:

- Your resume.
- Your transcript.
- A description of any project or research work that you have completed or with which you are actively involved.
- All manuscripts that you have written or have helped to write.
- Your "statement of purpose" essay.

- Grant application essays, if you have them.

This extra information will help the letter writer to give a full of an account as possible of your work as a student and potential as a graduate student. Some of your letter writers will have a close knowledge of what you have done, and others may not. The complete information in these documents that you supply to them will help each writer to craft as strong a letter as possible.

THE APPLICATION ESSAY.

Most graduate schools require applicants to write a "statement of purpose" essay. This essay is very important to your application, and should be written very carefully. You should compose a draft of your essay well in advance of the deadline so that you can critique it, and have others (such as a professor) critique it. Leave ample time for revision of the essay.

Before you write your essay, you should understand the role of the essay in the application process. As for fellowship competitions, the pool of applicants to any good graduate school will have many more students who have good grades and GRE scores than there are places available. The final decisions are often made on other criteria, which means the reference letters and the student's representation of themselves in the statement of purpose. Graduate students must eventually do independent, original research. To the extent that your essay (and your letters) provides evidence of your prospects to do research, they can be very helpful to the admissions committee. Just as for fellowship applications, be sure to describe any research projects or problems that you have worked on, or are working on. It will be helpful to have narrowed your interests to some extent, and can focus your statement in some such direction.

For both fellowship applications and graduate admissions, the short bit of advice is: write a coherent application, playing to your strengths, that gives the evaluators the best opportunity to form an impression of you that goes beyond your grades and GREs. And give yourself plenty of time to assemble, proof, and revise your application. Best of Luck!

