

Getting Into Graduate School

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HOW TO GET IN TO GRADUATE SCHOOL¹

Graduate school: It is not just more of the same!

Is graduate school for you? Maybe, but do not assume that once you graduate from college you must go on to graduate school. Find out what grad school is all about – talk to professors and graduate students, sit in on a graduate course or even a lecture or two, spend some time doing research. You will quickly find that grad school is not just 4-5 more years of college. As a graduate student you will move from the position of a consumer of knowledge to that of a creator of knowledge.

Basically, graduate school is an apprenticeship, and as a graduate student, you are more like a researcher than a student. You should be planning to focus on acquiring the skills that are necessary to become an independent professional. Grades are much less important than they were in college. Likewise, you will no longer define your efforts by the school calendar; you will work year-round.

When should you plan to attend graduate school? When you are ready! Many students wait until they have had some post-college experience working in the area in which they wish to specialize before they move on to graduate school.

Choosing a graduate program

Check the Internet or call or write prospective graduate programs and ask for a brochure describing their program. Learn what can about the opportunities (and requirements) of each program. But do not rely only on what the program tells you (after all, they are trying to look as good as possible!) – also do some research of your own: Ask faculty members at your institution or elsewhere about the program.

What should you look for in a training program? Here are some suggestions:

1. Who are the faculty? As a high school student, you decided which college to attend based on the reputation of the institution. However, in choosing a graduate program it is critical that you focus instead on the reputation of the faculty in the department of interest – this is the single most important variable in determining the quality of your graduate. Thus, learn about the faculty at the institutions you are considering. Do a "literature search" using something like *Medline*. Read one or more of their papers and see if this is the sort of research you are interested in doing yourself.

Once you have an idea of a few people you would like to work with, contact them and let them know about your interest in their research. Explain that you would plan to apply to the training programs in which they work. Ask them to send you reprints of some of their articles and to let you know whether they might be interested in pursuing your candidacy.

¹ This manual is based on workshops we provide at the University of Pittsburgh and elsewhere as part of our program in "Survival Skills and Ethics." For the most up-to-date version of this material see our web site at www.pitt.edu/~survival. Comments on how we might improve this manual are always appreciated. We can be reached at survival@pitt.edu. - BAF & MJZ

2. *How many faculty share your interests?* Make sure that you are part of a *community*. You have no assurance that the one person you came to work with won't leave the institution shortly after you arrive. Furthermore, being part of a community ensures that you will be exposed to a wider circle of scientists who will tour your department as visitors and seminar speakers.

3. *How good is their research?* Look at the number of papers they have published, and quality of the journals and the research.

4. *How good are the faculty as educators?* Obviously, they need to be doing good research, but if they can't teach you what they know then you will not benefit from their expertise.

5. What are the requirements for getting a Ph.D.? Programs vary widely. Course work, teaching, research rotations, and exams often are involved. In some programs you will begin by doing research, other programs may require two years of course work before you are exposed to lab work. You should be sure that you have input into the process of deciding exactly what will be required for your degree. However, be wary of programs that have no specific requirements; by entering these programs you run the risk of being ignored.

6. *How long does it typically take a student to obtain their degree?* Ask this with respect to both students in the program and in your potential advisor's lab. Many faculty members will say that it should be possible to complete a Ph.D. degree in no more than 5 years. Yet the national average is more than 6 years. This means, of course, that some people take even longer.

7. *How many students are there*, both in the graduate program and in the specific research group in which you will be working? It is desirable to have other students to work with, however, you also want to make sure that there are enough resources to go around.

8. *How many students (and faculty!) of color are there; how many women? What programs are in place for retention?* Many program state that they are interested in diversity – but how successful are they in attracting a diverse population of students, and what percentage of those students complete the program successfully?

9. Where have previous students gone? Good positions means good training and placement.

10. *What type of financial aid will you receive?* Most graduate programs in the sciences will cover your tuition and other fees and also provide you with a stipend to cover your living expenses. How much of a stipend will you receive, and will you receive benefits such as paid tuition and health care? How long will the support be provided? (Warning: Money is important but don't make your decision of where to go to graduate school on the basis of a difference in \$1000 in financial aid; weigh all of the factors carefully.)

11. *What obligations will you have*? Students often are required to work as a teaching assistant for a specified amount of time. And lastly, how far will the money you receive go in the community in which you will be living? All of these issues need to be examined,

How to apply to graduate school

The process of applying to graduate school is much more interactive than applying to a baccalaureate program. As a high school student, you had few opportunities to influence your chances of getting accepted into college, other than submitting the best application you could. This was due to the large number of applicants. However, the number of applicants to graduate school is significantly lower. Thus, in graduate school, the applications process is much less formal and there are several points along the way that you can influence.

As a high school student, you could be certain that the individuals who reviewed your application materials were administrators. However, for graduate school the admissions committee is composed of researchers in your field. They look for people who will succeed as professionals, rather than just looking at previous grades or results of standardized tests.

What will the admissions committee see?

1. Your application – You will be asked to fill out an application with the standard sort of information, name, address and other contact information, individuals who will be writing letters of recommendation, and so forth.

2. Your essay – you usually are asked to write an essay that describes your research interests or why you are applying to this particular program. Your answers should be well written and as specific as possible. Explain why you want to get into the graduate program/lab you are applying to, and how the experience you will gain in that environment will further your career. Be as specific as possible. And strengthen your application by making it neat and easy to read. By all means, use a typewriter or word-processor! Compare the following:

I am interested in attending graduate school since because I have always want to be a sientist.

I am interested in attending graduate school because I have always wanted to be a scientist.

I am interested in attending the graduate program in neuroscience at the University of Pittsburgh because of the outstanding work in neurodegenerative diseases that is done there. I have spent the past summer doing research on...

Which application would you focus on if you were a member of the admission committee?

3. **Samples of your work** - It is wise to include samples of your work, as this gives the admissions committee a better idea of your performance than your transcript. Include examples of any research experience you have, even if it is in a different field. Here are the types of things you could submit: manuscripts, abstracts from scientific meetings, reports or term papers you have written for a class, or a report from an independent study. If you do not have any of these things, it is not too late to do an independent study. This shows initiative, and is a good strategy for overcoming low grades that appear on your record. If there's something that would help your application that they didn't ask for, submit it anyway. This is one of the best ways for the committee

to become familiar with the quality of your work. If you are worried that you are submitting too much, then send in a letter listing items that are available upon request.

4. Your transcript - The admissions committee will review not only what grades you received, but also the difficulty of the courses that you took. Take the hardest classes you can and do well in them. Also, it is preferable that you focus your efforts in one or two areas. Overall grade point average (GPA) low? Try calculating it without that first year or two during which you had low grades; see what your GPA is in the courses most relevant to your academic interest. If that helps, indicate this in your cover letter or in your essay.

5. **Graduate Record Exam (GRE) scores** - There are two GRE tests, the general and the subject. The general test has 7 parts, which are divided as follows: 2 verbal sections; 2 quantitative; 2 analytical; and 1 experimental. The experimental section is used by the makers of the GRE to test new questions. The scores from this section are not reported to you or your specified institutions, however, when you are taking the test you will not know which section is the experimental one.

There are 17 different subject areas in which a GRE test is available. Topics include chemistry, physics, and biology. Check with the programs you are interested in to see if a subject test is required.

Practice can make a difference! There are a number of practice manuals, programs, and courses for the GRE, and many student report considerable improvement in their scores as a result of making use of one or more these options. At the very least make sure that you are familiar with the format of the exam.

6. Letters of recommendation - Letters of recommendation are extremely important. Usually, you are required to solicit three or four letters. However, this is a minimum, and you should submit additional letters of recommendation. Furthermore, by arranging for more than the required number of recommendations, if one is not sent, or gets lostl, the review of your application is not delayed.

The typical letter of recommendation says something like this "Jane was a student in my class of 150. She got a B in the course and it was a pretty tough class, so she must be a good student." This is terrible letter! It tells nothing about the student that is not evidenced elsewhere. The best letters of recommendation are written by people that know you well. Take time to educate your faculty. No matter how well you already know them, offer to spend half an hour with them talking about why you want to get into graduate school. This time will enable them to get an impression of your character and motivation.

Will the faculty members send your letter of recommendation on time? It is very easy for your letter to get lost. Tell the faculty member when their letter is due, and then tell them something like "And if you don't mind I will check back with you a week before it is due." Then check back. Most faculty appreciate this type of reminder.

7. **YOU** (if at all possible) - An interview is extremely useful both for you and the school. It allows both parties to get to know each other, and see if working together is possible. In addition, it allows you to see the facilities they offer and the community in which you will be spending the next years of your life. If it is at all possible, arrange to visit, even if you have to fund it yourself.

How many programs should you apply to?

Apply to several programs – perhaps half a dozen or more, and select a range of programs from the highly selective to the less selective. Most program charge a fee (e.g., \$50) and this can add up. However, some programs waive the fee if you apply via their web site, and virtually all programs will waive the fee if you indicate financial hardship.

Preparing for your visit

Be involved in planning your visit. Indicate who and what you would like to see, including specific faculty members, graduate students (preferably without faculty present), and areas near the university where housing is affordable for students. Ask for your itinerary in advance and prepare for all of the people you will meet. You want to appear educated and be able to ask intelligent questions.

Practice answering typical questions that you might be asked; practice first by yourself and then with a partner. Typical questions include: why do you want to go into (this field of research); why are you applying to this program; tell me about you research experience; and why does your transcript indicate this red flag (e.g., a low grade; a leave of absence)?

Be sure that you are able to converse about any research you have been involved in. Know what you did and why you did it. Don't ever find yourself saying, "I did that because I was told to"! Even if that was the initial reason, make sure you develop your own rationale.

On your visit

While you are visiting, dress appropriately, and be prompt for all of your appointments. Behave appropriately: remember, during the visit you may be judged at any time, by faculty, postdoctoral fellows, or graduate students, so be on your best behavior. Remember that by coming to their program, you will be spending several years in this location, so be sure to interview them as well as being interviewed. And talk to students as well as faculty members. After you return home, write thank you notes to the people you visited thanking them for their time and hospitality.

In summary

It is important to get a good background: take the most difficult courses you can and do well. Do some research, if not in the lab then in the library. Learn a lot about something specific you wish to pursue. Get to know several faculty members well so that they can write letters of recommendation for you when the time comes. When applying to graduate programs, fill out each application neatly and thoroughly; practice the interview, both questions and answers; and lastly, make your final decision very carefully - don't jump on your first offer, you probably will have a choice.

Suggested Readings

Selected Resources

See our website (www.pitt.edu/~survival) for an extensive list of additional resources on this and other topics related to professional development.

Applying to graduate and medical schools

Peters RL. Getting What You Came For: The Smart Student's Guide to Earning a Master's or a Ph.D. New York: Noonday Press, 1996.

Rogers CS. How to Get Into the Right Medical School. Illinois: NTC Publishing Group, 1997.

National Academy of Sciences. Careers in Science and Engineering: A Student Planning Guide to Grad School and Beyond. Washington, DC: National Academy Press, 1996. http://www.nap.edu/books/0309053935/html/index.html

PhDs.org. Meta list on *Choosing a graduate school*. http://www.phds.org/index.php?section=4

Being a graduate student and conducting research

How to get the mentoring you want: A guide for graduate students at a diverse university. www.rackham.umich.edu/StudentInfo/Publications/StudentMentoring/mentoring.pdf

Beveridge WIB. The Art of Scientific Investigation. United States: Vintage Books, 1950

Booth WC, Colomb GG, Williams JM. *The Craft of Research*. Chicago: The University of Chicago Press, 1995.

Isaac A. The African American Student's Guide to Surviving Graduate School. Sage Publications, 1998.

Medawar PB. Advice to a Young Scientist. United States: Basic Books, 1979.

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