

Grad School: Frequently Asked Questions

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Before we start, let me clarify some things. This FAQ contains *my* answers to the questions and reflects my experience and opinion. Thus, it is by no means a completely objective document, and it should not be your only go-to resource. Take all my answers with a grain of salt. Furthermore, many of these answers are more pertinent to students seeking STEM degrees than those studying, say, humanities, or those intending to attend law, medical, or business school.

These answers are from the perspective of someone who, very recently, went through the grad school application process, and is just about to embark on grad school research. My answers may change with time, so it's best to talk to as many people as you can in order to gain different perspectives.

Finally, the answer to a lot of these questions is: it depends. The truth is, there's a plethora of factors that go into the grad school application process, and discussing each component in a vacuum takes away from the holistic point of view.

Now, let's begin.

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Acknowledgements

My Background

Some asked for my own background and stats, so here they are:

- For my Bachelor's, I studied Mechanical Engineering with a minor in Physics at McGill University.
- CGPA: 3.99/4.00.
- GRE Score: 154 Verbal, 170 Quantitative, 5.0 Analytical Writing.
- Physics GRE Subject test score: 970/990.
- Schools I applied to:
 - Caltech
 - Columbia
 - McGill
 - MIT
 - NYU
 - Princeton
 - Stanford
 - UC Berkeley
 - UCLA
 - University of Toronto
- I was accepted to Caltech, McGill, MIT, and UofT, and admitted to a Master's program without funding for NYU. I was rejected from the rest.

I'd recommend against comparing your stats against others. A higher score doesn't necessarily increase your chances, and a lower score doesn't necessarily rule your application out.

General questions

Should I apply to grad school?

I get this question often, and the answer isn't exactly simple. The truth is, *you* are the person who needs to answer that question, and you can do that by introspection. What are your interests? Do you enjoy doing research? Do you enjoy teaching? What kinds of problems interest you? What's the ideal career trajectory for you, and does grad school help advance your goals?

You may not know what your ideal career trajectory is, which is totally fine. In that case, you should reflect on past experiences to see what your interests and aspirations are. Did you do an internship recently? Did you like it? What did you like and dislike? Does that say anything about the type of person you are? Does it help narrow down your interests? Does it help clear up the road ahead?

Questions like these should help you reflect and see if grad school is the path you should be taking. You need to make sure there's a valid reason for going to grad school. Maybe you're investing in yourself; maybe the career you want requires a graduate degree; maybe you're not too sure what you want to do and a master's degree can help you figure that out. The most important factor is that you shouldn't be doing grad school for the sake of doing grad school.

How many schools should I apply to? Should I have a certain number of "safety" and "reach" schools?

It depends on plenty of factors. Theoretically, you can apply to as many schools as you want. However, there are various obstacles, from finances (applications are pretty costly) to time constraints (you can only do so many applications). I initially started with a large set of schools I wanted to apply to. That included any school that might be even remotely a good fit, and that I would attend if I were offered admission. I ended up with around 40 schools to apply to, which was completely unmanageable for me. I narrowed down the list by looking more closely at the programs that they had to offer, and figuring out how well of a good fit I would be in the program. I looked more closely into the university: what types of resources do they have available? How accommodating are they? I also considered other factors, like location. For instance, schools like Yale and Cornell weren't desirable options for me due to their location (I'm used to living in big cities), and Oxbridge was also unrealistic. Overall, the first factor you should look into should be research, and everything else is more or less secondary.

After I narrowed my schools down, I ended up with 10 top contenders: schools that were a really good fit given my interests, and that I would have definitely wanted to attend if they had admitted me. 10 was a pretty good balance for me; it was enough to safely assume I'd get an offer, and it was fairly manageable.

There's no set ratio of "safety" and "reach" schools to apply to. In my case, I'd say 3-4 of the schools I applied to were "safety" schools. In hindsight, I'm not sure if there even is a thing as a safety school. I was actually rejected from some of the schools that I considered to be "safeties."

Should I apply for a Master's or a PhD?

This goes back to the question of whether or not a particular degree helps advance your goals. If you're interested in Academia, you should do a PhD. If you're an engineer looking for a bit more experience before entering the industry, a Master's may be more appropriate.

Furthermore, if you're unsure of what your interests are, or if they are too broad, you might consider doing a Master's first to test the waters of the field you're about to go into. A PhD is quite long, and you don't want to be stuck doing something you're not interested in (of course, you may be able to change your field of research during your PhD, but I won't discuss that

here).

The answer also depends on whether you're looking at schools in the U.S. or Canada. Note that the Master's/PhD system in the U.S. is a bit different than in Canada. In Canadian schools, you do a Master's before starting your PhD, unless you're able to fast-track your graduate degree to a PhD and skip/shorten the Master's. In the U.S., a Master's is typically a part of a PhD. Usually, in the first year (or first two years) of your PhD, you take course work and prepare for the qualifying exams. Upon passing the qualifying exams, you'll be given a Master's degree even though you're working towards a PhD. So, if a year down the road, you decide that you don't want to finish your PhD, you can "Master out" by writing up your work, submitting it as a thesis, and leaving your program with a Master's degree as opposed to a PhD. How is this relevant? Basically, if you think you'd want to do a PhD down the road, just apply to the PhD programs in the U.S.; don't worry about the Master's programs.

What are the application requirements?

For North American schools, the application requirements are typically as follows:

1. Statement of purpose
2. Personal statement (if applicable)
3. Letters of recommendation (typically 3, though some schools may ask for fewer or more)
4. Graduate Record Examination (GRE) scores
5. GRE subject test scores (if applicable)
6. CV/Resume
7. Transcripts

I'll delve a bit deeper into each component below.

Statement of purpose

How important is the statement of purpose?

The statement of purpose is arguably the most important component of your application. It is the one component that you have *complete* control over, and it can make or break your application. I'd recommend spending a good amount of time crafting your statement of purpose.

What should be in my statement of purpose?

Actually, I'm not the best person to answer this question. The best people to answer this question are your professors (especially ones that have served on the admissions committee

of their program), since they've likely read plenty of statements of purpose, and can give you some pointers about dos and don'ts.

I'd avoid things like "since the age of 3, I wanted to be a scientist." Unless you have a unique story that you think you can write in a way that truly moves the admissions committee (which is rare), I'd avoid it and just get to the point of what interests you and why you're qualified for grad school. You only have so much space to write, so focus on showcasing your strengths instead of giving a backstory. Also, make sure that your statement of purpose doesn't simply repeat your CV when discussing past experiences, but rather complements it.

In my case, I started my introductory paragraph talking about why I'm interested in the field I want to pursue in grad school, and outlining how my past experiences make me a suitable candidate for that particular program. Then I delved deeper into my past research experiences, which took 2-3 paragraphs. I also added a paragraph on my extracurriculars, focusing on teaching and student government. Then I further discussed my research interests, expanding on what I was leaning towards working on, and which faculty members' research interested me. Finally, I concluded by summarizing what I had discussed, and reiterating why I'd be a competitive candidate for the program.

Personal Statement

What is the personal statement, and how does it differ from the statement of purpose?

The personal statement is an essay that asks you to talk more about your experiences outside of university. In particular, any challenges that you have overcome to get to where you are, how you've served and given back to the community, and how you plan to continue doing so at grad school. This isn't a common requirement; from my own experience, only UCLA, UC Berkeley, and NYU required it.

Letters of Recommendation

Who should I ask for a letter of recommendation?

If you have research experience, then your supervisors should definitely be your go-to people. If you haven't done research with a Professor, but know them pretty well (from courses and/or general interaction), then they could also be a good choice. After that, it's industry professionals that you worked for during an internship. Lastly, it's professors with whom you've taken a course that you've done well on or made a positive impression. Do not

ask your high school teachers for a letter, unless you absolutely have no one else who could write you a letter.

Any general advice regarding letters of recommendation?

Make sure your letters don't repeat the same thing. You want to extract as much value from them as possible, so, ideally, they should show different aspects of your personality and focus on different strengths. You can work this out by collaborating with your letter writers and asking them to focus on certain things.

GRE and the GRE Subject Test

How much do my GRE scores matter?

GRE scores definitely don't matter as much as the rest of your application. From what I understand, universities mostly use the applicants' scores as a cut-off. That is, if someone scores below the program's cut-off score, they won't consider their application. The catch, however, is that there really isn't a way of figuring out what that cut-off is going to be. It likely depends on a variety of factors, from the size of the applicant pool to the level of competition.

How long did you study for the GRE? How much should I prepare for it?

I didn't study for the GRE any more than 2 weeks, and no more than a week for the subject test. I also didn't do any practise tests. I detest standardized tests, and would much rather do something productive/meaningful with my time than study for them.

In hindsight, this was a pretty risky move. I didn't end up doing too well on the verbal section of the GRE (I think I placed on the 64th percentile). Would I recommend doing what I did? Probably not. But, I also wouldn't recommend studying for the GRE for months/years. It's all about finding a nice balance.

What score do I need to get into a "top school"?

Top schools typically have admission rates of below 10%, so I'd say anything above 90th percentile is a safe bet. If you're applying to a program that is a bit more math-heavy (engineering, physics, computational science, etc.), then I'd aim higher for the quantitative section (95th percentile or above).

Does this mean that if you score below the 90th percentile, you should give up? Absolutely not. Even if the GREs are used as a cut-off, schools look at your application as a whole.

Having other strong components in your application can far outweigh a low score.

CV/Resume

How important is the CV?

The CV is the backbone of your application. It's an outline of your past experiences and skills that other components of your application (such as the statement of purpose and letters of recommendation) should draw from and make connections to. You should spend some time on your CV to make sure it's well-written, concise, and well-formatted.

What should my CV include?

The main components of your CV should be: education, research experience, skills, academic awards (such as scholarships & fellowships), and teaching experience (if you have any). The rest (extracurriculars, languages, hobbies and interests) should be secondary.

What CV format should I use?

That's really up to you. I used a double column format because it's denser and doesn't waste as much space. Feel free to add a splash of colour here and there, but don't overdo it.

Transcripts & GPA

How much does my CGPA matter?

Similar to other quantifiable statistics (like the GRE scores), the CGPA/GPA is mainly used as a cut-off. If your GPA/CGPA is below the school's cut-off, they may not consider your application, or it might weaken your application compared to others.

What CGPA do I need to get into a "top" school?

Just like the GREs, there's no way of figuring out what each school's CGPA cut-off is. With that said, anything above a 3.85 should put you in a decent spot. Again, if your CGPA is lower than that, it doesn't mean that all hope is lost.

Do admissions committees look at specific courses, or do they consider all the courses you've taken?

From what I understand, the committee does look at specific courses that would be pertinent to the research you'd like to pursue at grad school. However, they also look at all the courses

you've taken to gauge your background and knowledge level. The grade for the pertinent courses definitely matter more. For instance, if you're interested in research in robotics, your performance in fluid dynamics and thermodynamics matter less than your grade in dynamics and control systems.

Do admissions committees look at your GPA in later years, or do they consider your CGPA only?

From what I've gathered, they typically look at your GPA in the later years. Most committees understand that the first year or two can be rough since students are adjusting to university. However, they still do look at your transcript in whole, so if there are semesters and courses you didn't do well on, you should elaborate on them in your application.

Application process

What timeline did you follow?

Here's the timeline that I roughly followed:

- May:
 - Started compiling a list of universities I'd be interested in applying to.
 - Started studying for the GRE.
 - Figured out who my recommendation letter writers would be.
 - Reached out to professors in my university to get advice on the grad school application process.
- June:
 - Narrowed down list of schools to ~10
 - Did the GRE.
 - Read some publications of the professors I was interested in working with.
- July
 - Started writing my Statement of purpose. I wrote a general draft that would form the backbone of every school's statement of purpose, and left out some paragraphs and sentences to be filled specifically for each school.
 - Reached out to professors that I was interested in working with. Many didn't reply back. For those that did, I let them know that I would be applying to their school, and kept in touch with them throughout the application process.
- August
 - Revised my statement of purpose multiple times. Asked for feedback from peers and professors
 - Restructured my CV for grad school applications. Received feedback from peers, professors, and the writing centre at my university.
- September

- Worked a bit more on my statement of purpose.
- Worked on scholarships applications. I applied to two major scholarships: Rhodes and Knight-Hennessy. The applications took quite some time to prepare, so the entirety of September was devoted to them.
- October
 - Studied for and did the physics GRE.
 - At this point, I set aside my statement of purpose, to be revisited closer to the application deadlines.
- November
 - Sent my GRE scores to institutions. November was a busy month, with midterms, projects, and thesis writing, so I didn't get much of a chance to work on applications.
- Early December
 - Revisited my statement of purpose and made some final tweaks.
 - Submitted all applications.

I'm a pretty slow writer and it takes me a decent amount of time to put my thoughts into appropriate words. This timeline worked well for me because it allowed me a decent chunk of time to work on and revise my statement of purpose. Some people can do the job in a much shorter timeline, and others need more time; feel free to adapt this to your own style.

Here's the rest of the timeline which includes when I heard back from schools:

- January
 - Received an interview request email from MIT. I was interviewed the week after (mid January).
 - Received another interview request from MIT shortly after the first interview. The second interview took place a week after (mid-late January) and was more in-depth (see [below](#)).
- February
 - Received offers of admission from MIT & Caltech (first week of February).
 - Rejected from Stanford (mid February). Twice¹.
 - Accepted to UofT (mid February).
 - Rejected from Princeton, UC Berkeley (mid-late February).
- March
 - Accepted to McGill.
 - Rejected from UCLA.
 - Offered a Master's admission to NYU.
 - Late March (around March 26/27th): deadline to accept/decline UofT's offer.
- April
 - Rejected from Columbia (mid April).

¹ I got two slightly different rejection emails within 30 minutes. My friends and I got a good laugh out of it.

- April 1st: deadline to accept/decline McGill's offer.
- April 15th: deadline to accept/decline MIT's & Caltech's offers.

What is the hardest thing about the process? What kept you up at night?

I wouldn't say there was anything easy about the process. From finding the right programs and advisors, to crafting a statement of purpose, to completely revamping my CV format, every part of the process was a challenge. The hardest part, however, was actually after I'd submitted my applications, and just had to wait to hear back from schools. There's a decent amount of anxiety that comes with merely waiting for your future to be decided.

What do grad schools value more: specific research experience around the topic you want to focus on, or breadth of experience?

This answer pertains more to U.S. schools. For Canadian schools, see [below](#).

This depends on a variety of factors, the most important being the professor you'd like to work with. Some professors prefer taking in students who have had research experience pertinent to their field, so they can get up to speed much more quickly. For some other professors, this isn't as important, and they focus on breadth of experience or even just a willingness to learn. It's different for a Master's, but for a PhD, you're in it for the long haul, so previous experience isn't as important as traits like passion and grit. In general, a motivated but inexperienced candidate can quickly catch up to and surpass an experienced but less motivated candidate.

At the end of the day, you shouldn't tailor your experiences to what grad schools look for. If you have diverse interests, pursue them; your undergraduate years may be the last chance for you to do so. If you prefer being laser-focused on one topic, go for it. Whatever your experience is, it's really about emphasizing it in your statement of purpose (and letters of recommendation), and showcasing it as a strength that gives you an edge over other applicants.

Are entrepreneurial/extracurricular activities outside of academic activities considered in the application for graduate studies?

In short, not as much as research experience. Again, this depends on the advisor you'd like to work with.

There are professors who emphasize extracurriculars because they want to have well rounded students who aren't just devoted to and defined by their research. Some professors, on the other hand, don't care if a student lives and breathes research and does nothing else, so they don't put much emphasis on extracurriculars. Both categories of professors, however, put

more weight on research experience compared to extracurriculars.

In general, it's best to do extracurriculars for your own interest. Extracurriculars do, indeed, give you skills that can help you tremendously in grad school. It's your job to make sure the admissions committee sees that. If you've had extracurricular/entrepreneurial experience, you should mention it in your statement of purpose and showcase it as your strength.

How does funding work?

This depends on the location and the degree you want to pursue.

Funding in the US

- PhDs are usually funded, either by the advisor, department, or institution, through a fellowship, teaching assistantship (TAship), or research assistantship (RAship).
- Funded master's programs are typically harder to come by, because they're shorter and the "return on investment" is lower for the university. However, there are Master's programs that fund you through TAships, RAships, or fellowships.

Funding in Canada

- Master's and PhD programs are funded by the advisor, department, or institution, and funding availability is more or less equal.

In both cases, funding may dry up and you'd have to look for fellowships to support your studies. Some programs even incentivize their students to apply for fellowships despite available internal funding. This is partly because fellowships are prestigious and allow you to work on the projects you're interested in (rather than only being able to work on projects that have available funding).

What do you recommend doing to optimize my chances of getting into competitive programs?

Reach out to professors, both the ones at your current institution and at the one you'd like to study at.

Reaching out to professors in your current institution can help give you an idea of what they look for in a candidate. Furthermore, they can give you tips on how to approach professors, and what to include in your statement of purpose. Finally, if they know professors that you might be interested in working with, they can refer to them, which can help your application significantly.

Reaching out to professors that you'd like to work with helps get your name out there. Hopefully you can establish some sort of a connection with the professors and keep in touch

with them throughout the application process, so when the time comes for the admissions committee to make decisions, the professors can recommend you.

How do I reach out to professors?

This is a tough one.

The first thing to keep in mind is that professors receive tons of emails from interested students each day, so it's pretty hard to make yourself stand out and get their attention. If you reach out to a professor and don't get a reply, that doesn't mean there's no hope for you.

I'd highly recommend that you keep the email brief, and take advantage of things like highlighting and bolding to draw them to specific parts of your email. Professors don't have a lot of time to read emails and definitely won't read your email if you've written them an essay in plain text. Keep it to 3-4 meaningful sentences.

When I was reaching out to professors, I simply stated my interest in a particular field of their research and explained the reason behind my interest in 1 sentence. Next, I asked them if they'd be accepting any students in the coming year. If I'd read some of their work and wanted to discuss with them, I'd add a sentence at the end. If they responded, I'd usually propose a voice/video call to further discuss their work, and take things from there. It's important to keep in touch with them throughout the process, so they don't forget you.

Interviews

Do grad schools typically do interviews?

This depends on the program you're applying to. I believe life science programs typically have interviews, though I'm not sure of the structure and format they follow. Out of all the schools I applied to, I was only interviewed by MIT (Princeton also had interviews for the program I applied to, but I didn't end up getting one).

What's the interview process like?

My interview was in two rounds. The first round was concerned with my overall experience, and assessed how well of a fit I would be for grad school in general. I was interviewed by one professor on the admissions committee, whose research was not relevant to my field of interest. This interview wasn't too hard; I'd say the only curveball question was: "You're competing with applicants that are very accomplished. Some have prestigious fellowships and others have first-author publications; what stands you out?"

The second round was a bit more focused on my research aspirations, experience, and my

ability to communicate various scientific concepts. I was interviewed by two professors whose research aligned with my interests.

This interview was definitely more difficult; the interviewers' questions pried my knowledge and assessed how much I knew about certain subjects and how well I could explain difficult concepts in their field of research.

How should I prepare for my interview?

Make sure you know as much as you can about the program they're applying to. Do they have a vision, and does it align with your core values? From your perspective, what sets the program apart from others? You should have addressed some of these questions in your statement of purpose, so answering them should be relatively easy.

Make sure you're familiar with the research of the professors you want to work with, and that you've read some of their papers. Brush up on relevant subjects, if necessary.

Finally, when it's time for you to ask questions from the interviewers, make sure you have some insightful ones lined up.

Perspective of a Professor

Professor Andrew Higgins at McGill's Mechanical Engineering department has generously provided some insight on the above application components here:

“I've been on the admissions committee for the last two years and the biggest surprise I got was how carefully the committee studies the statement of purpose, C.V., etc.

Statement of Purpose

For the statement of purpose, I would recommend trying to convey maturity and sophistication. This often comes across in the terminology you use: Better to say, 'I intend to pursue a career in aerospace, specifically aircraft design' rather than 'I like airplanes.' Quality of writing—spelling, etc.—are actually evaluated, so this is not something people should try to throw together at the last second.

I completely agree with you on the 'since the age of 3, I wanted to be a scientist' – I'm so sick of reading these clichés! Much better to discuss what is motivating you now and how your interests evolved with your UG course work.

GRE

Agreed people should not worry about this—there is a huge backlash against GRE. I would still recommend writing a couple of practice tests. You would be amazed how much your score goes up between writing the first and second practice test.

CV

I would certainly highlight any conference presentations / publications. If you have any familiarity with LaTeX: I would actually recommend putting your C.V. into LaTeX. This is a bit of an ‘academic fitness signaling’ exercise, i.e., showing you know how to use LaTeX, but it works! I am always pleasantly amazed when I see students submit their problem sets in LaTeX. Since LaTeX is emphatically *not* used in industry and unique to academia, I always presume such students are headed to grad school!

What do grad schools value?

I agree with [your answer](#) as it applies to the U.S., but less so for Canada. For NSERC funding, the exact formula is published. See ‘Selection criteria’ [here](#). At McGill, our admissions committee kind of follows the same formula (not exactly, but we tend to use the same mindset for both admissions and scholarship selection).

Recommendation letters

It is good to be organized and prepare a complete list of schools you will be applying to and inform the people who will be writing your reference letters **well in advance** of all the schools you will be applying to and the associated deadlines. You did an excellent job of this when you did your application, but as you know, I and most other profs wait until the last possible second because we are continuously triaging our time! The main thing is to avoid coming back to profs and saying, ‘Can you write another letter for me?’ You definitely want to avoid this as it gets annoying.”

Parting Words

What resources are there to help?

Universities usually have documents which explain how to write an effective statement of purpose. I’d recommend taking a look at them.

Get as much help as you can from your friends and professors. They can look over your application and give advice on what to include/exclude.

Some miscellaneous resources are: [r/gradadmissions](#) if you're looking for a community that shares your pain, and [GradCafe](#) for checking to see when schools send out offers.

What advice would you give to someone who is about to apply to grad school?

People often get consumed by their flaws and weaknesses. Don't approach grad school applications with that mindset, because it will show in your writing and your application in general. Instead, focus on your strengths, and think of ways that you can contribute to the world of research that set you apart from the rest.

It's best not to go through the process alone. If you have friends that are also applying to grad school, it's good to team up with them and help each other out. This makes the process significantly more enjoyable.

What advice would you give to an undergrad who will be applying to grad school in a few years?

Network! Make sure you build strong relationships with your professors. Some of these professors may end up writing your letters of recommendation. Some may offer you research positions, and some may be able to refer you to professors that you'd like to work with at other institutions. Professors are invaluable, and there's plenty you can learn from them.

Acknowledgements

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I hope this document proves useful to you. If there's anything else you'd like me to add, please let me know!