GRAD SCHOOL WORKSHOP

Overview

Part 1.

- What is graduate school and how does it work?
- What do students say about it?

Part 2.

- How to apply?
- How to choose a school?
- About the GRE’s.
- How COVID-19 might change things (this year).

Part 3

- Questions/discussion.

Some quick facts

- It's usually "free." (Tuition is waived, but you work.)
- It usually takes 5 or 6 years.
- For the most part, people don't get a master's degree first.
- Bachelors degrees in 2017:
  - 24,000 BS in Math.
  - 71,000 BS in CS & IS.
  - 2,000,000 overall.
- Ph.D.'s in 2017
  - 1,900 in Math
  - 2,000 in CS & IS
  - 55,000 overall

IES : NCES National Center for Education Statistics

NSF SED Science & Engineering Doctorates

A snapshot of grad school—year one

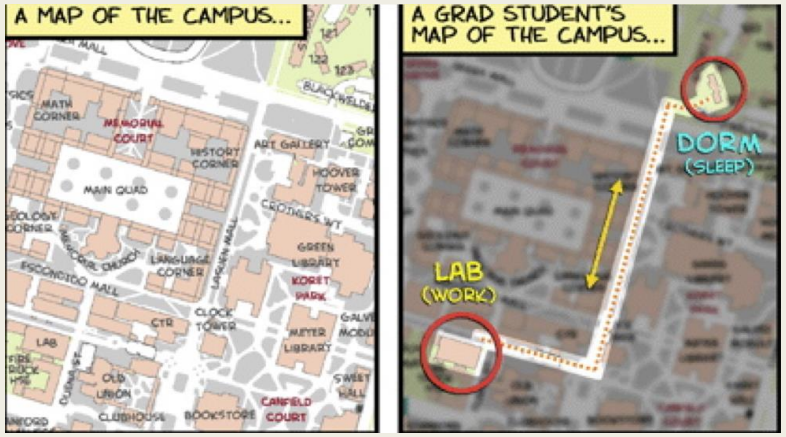
- During the first year
  - Basic coursework: algebra, topology, real & complex analysis, logic, applied math, perhaps others (depends on the school).
  - Light teaching duties, like grading, leading recitations* in calculus.

- End-of-year qualifying exams
  - Usually 2 or 3 exams in fundamental areas, like algebra, topology, analysis, applied math, logic.
  - Usually 2 or 3 chances, sometimes different levels of passing.
  - The tests are **hard** but exhilarating.

*A recitation is a guided problem session. Many schools have recitations associated with Calc 1, 2, and sometimes 3, and other lower-division courses. Graduate students typically run them.

A snapshot of grad school—years 2&3

- During the year
  - More advanced coursework, specialization.
  - Research seminars (attending & speaking).
  - Teaching.



- Specialty exam
  - Oral exam in your area of specialization.
  - Usually given by your advisor and a committee of 3-4 other faculty.
  - Once passed, your status changes from “pre-candidacy” to “candidacy.”

A snapshot of grad school—years 4 to 6

- During the year
  - Research and research seminars—no more regular coursework.
  - Traveling to and speaking at conferences.
  - Writing dissertation (thesis).
  - Teaching.

- Defense
  - Present your work.
  - Answer questions.
  - Transition from Ph.D. Candidate to Doctor of Philosophy in Mathematics!

- Apply for a job. (A topic for a different workshop.)

A former USF student's thoughts

… I have to say there is a huge difference between undergraduate and graduate math courses. The textbooks are getting harder and I am required to read much more … I don't need to worry about final exams anymore, but the weekly assignment will just steal even more of my spare time. Despite of all these challenges, it feels great overall because I enjoy working on math.

… the pace is super fast and there is no time to go into details for [many] of the topics. …. If I am to offer any advice to students at USF who are interested in learning math at graduate level, I will just say that it is important to take as many math courses as possible because they really expected you to know a lot of stuff at graduate school.

Applying to grad school:
The big picture

1. Transcript.
2. C.V.
3. Personal statement.
4. Test scores.

Applying to grad school:
The (typical) review process

1. You submit your application, and your letter writers submit their letters.
2. The Graduate Selection Committee distributes the applications so that each application is reviewed by one or two members of the committee.
3. Each committee member picks their favorite few applications and presents them to the rest of the committee.
4. The committee ranks the applications and makes offers to the top several applicants.
5. If offers are turned down, they move down the list.

As you put together your application, keep the process in mind.
Make it easy for someone to advocate for you.

Applying to grad school:
The GRE

- GRE General Test
  - *It's offered all the time.*
  - *Often required by the university.*
- Subject Test in Mathematics
  - *Only offered 3 times per year, or 0 times if there's a global pandemic.*
  - *66-question, multiple-choice paper test with a 3-hour time limit.*
  - *50% calculus (ALL of Stewart), 25% algebra (basic, linear, abstract), 25% topics (topology, logic, discrete math, probability, numerical analysis).*
  - *This test is hard, but not as important to your application as your letters and personal statement.*
  - *You should take the test in the spring semester of your junior year if possible.*
  - *Most, but not all, Ph.D. programs require this test.*

GRE® Subject Test Administrations Canceled for September 12 and October 17

The *GRE*® Subject Test administrations scheduled for September 12 and October 17, 2020, have been canceled due to impacts from the pandemic. Health concerns and local COVID-19 restrictions are preventing many institutions that have hosted GRE Subject Test administrations in the past from being able to provide a safe testing space. The Subject Tests cannot be offered online at this time, so the next opportunity to take a Subject Test — assuming health conditions improve — will be April 2021. If you were scheduled to test on a canceled test administration date, your test fee will be refunded automatically. The *GRE*® Program has begun sharing this news with graduate schools, and we suggest that you contact the programs to which you are applying for updates on their application requirements.

Posted: August 20, 2020

Applying to grad school:
Preparing for the Math Subject GRE

- Do a GRE Subject Math practice test from the ETS.
- Manage your expectations:
  - *50th percentile. Master **all** of Stewart's calculus.*
  - *80th percentile. Master "Cracking the GRE Mathematics Subject Test" by Steven Leduc.*
  - *99th percentile. Master undergraduate mathematics.*
- 50th percentile is not bad… Remember, this is a highly selective group of people to start with!
- Take multiple practice tests, and don't panic if the actual test seems hard—they get harder every year! But they are scored as percentiles, so everyone is in the same boat.
- Some sample problems.

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Applying to grad school:
Your Curriculum Vitae

- *Curriculum Vitae* is Latin for *course of life.*
- A c.v. is more detailed, and usually more academics-focused, than a résumé, but is similar in format. It can be longer, though, usually at least two pages, so don't use tiny fonts! (The people reading your application are probably old!)
- You should include…
  - *Academic history, include your GPA (optional).*
  - *Research interests (put something, even if you are not sure).*
  - *REUs and other research projects, with abstracts.*
  - *Teaching experience (grader, calculus help sessions, tutoring, everything).*
  - *Awards, honors, etc.*
  - *Relevant work experience.*
  - *Your name and contact info.* **Bold** *your name. You want them to notice & remember it.*
  - *Make a website & include the URL.*

Applying to grad school:
Your Curriculum Vitae

- You should include…
  - *Relevant skills, like programming language proficiency, foreign languages, professional certificates, etc.*
  - *Relevant service to the community and volunteer work, like Math Circles.*
  - *List advanced courses and reading courses (annotate if appropriate, and include textbook name & author).*
  - *If you have done relevant big projects for courses, list and describe them.*
  - *Professional affiliations (sororities, fraternities, AWM, AMS, MAA, etc.), and any offices you've held in these.*
  - *Any funding you received (summer research stipend, etc.)*
  - *Conference presentations/posters.*
  - *Published articles (if any) or articles in prep.*

Applying to grad school:
Your Curriculum Vitae

- You should **not** include…
  - The two weeks you worked at Dairy Queen when you were 15.
  - Just about anything else that happened in high school.
  - Your birthday, SSN, immigration/visa information, marital status, or other personal information.
  - A list of soft skills sometimes included on a résumé like, “I’m a team worker,” or “excellent problem-solving skills.”
  - A photograph of yourself.
  - ***Weird fancy fonts***, lots of colors, FONT-SIZE CHANGES, & stuff—keep it simple! Use **bold** and *italics* for emphasis, but sparingly.
- An example. And some more.

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The (typical) review process

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Applying to grad school:
The personal statement

- "..(the PS) provides additional evidence of your intellectual and creative achievement. The essay is also the only opportunity for the readers of your application to get a feel for you as a person as well as for you as a student. The essay is also the place where you can put your academic record into the context of your opportunities and obstacles. "-(Berkeley)
- "The personal statement should be a comprehensive narrative essay outlining significant aspects of your academic and personal history, particularly those that provide context for your academic achievements and educational choices. Quality of writing and depth of content both contribute toward a meaningful and relevant personal statement." -(U of W)
- "...they're likely looking for you to demonstrate that you've given some thought to what you want to do in the graduate degree [program] and with your future. It's fine if you don't know. No one is going to hold you to what you state. But here they want to know that you've done some research into what you're getting yourself into and what your motivations are for pursuing the degree." – (www.physicsforums.com)

Applying to grad school:
The personal statement

- This is really a cover letter for your application, and you can format it like one.
- Make **absolutely sure** it is grammatically correct. Ask other people to read it, and read it outloud to yourself 100 times.
- Write about what you've experienced/loved in the advanced courses you've taken. If you've done a reading course or self-studied something hard, describe it and include the name of the text you used and its author.
- Describe any research experiences.
- Talk about awards, competitions, etc.
- Describe what parts of mathematics appeal to you (and make sure it's consistent with the school's strengths).
- This is your only chance to address any holes or weaknesses in your application.
- Target it to the individual schools.
- **Ask faculty (i.e., us!) to read your statement and give you feedback!!!**

Applying to grad school:
The personal statement (tips swiped from the internet)

- Things to try to do:
  - Write directly and in a straightforward manner that tells about your experience and what it means to you.
  - Form conclusions that explain the value and meaning of your experience, such as what you learned about yourself and your field and your future goals. Draw your conclusions from the evidence your life provides.
  - Be specific. Document your conclusions with specific instances.
  - Get to the point early on and catch the attention of the reader.
  - Limit its length to two pages or less, 1.5 spaced. In some instances it may be longer, depending on the school's instructions.

Applying to grad school:
The personal statement (tips swiped from the internet)

- Things to avoid:
  - Using the "what I did with my life" approach, or the "I've always wanted to be a _____" approach.
  - Using a catalog of achievements. This is only a list of what you have done, and tells nothing about you as a person.
  - Lecturing the reader. For example, you should not write things like, "Communication skills are important in this field." Any graduate admissions committee member knows that.

As you put together your application, keep the process in mind.
Make it easy for someone to advocate for you.

Applying to grad school:
Letters of recommendation

- This is probably the most important part of your application, and all you get to do is ask someone else to do it for you. Plus you don't even get to see it!
- Choose faculty with whom you have taken **advanced** courses and done well.
- You should ask faculty if they would be willing to write you a letter in the spring of your junior year (if possible). Be polite (say "please" and "thank you"), and promptly send a thank you email with your c.v. attached.
- Gently remind them in the fall (early-ish).
  - *"Hi! How was your summer? I just wanted to check in and ask if you are still willing to write a letter for me. My updated cv and draft personal statement are attached. Thank you so much!"*
- Write again right before you send them the links to the online submission forms.
  - *"Hi! I just wanted to give you a heads up: I'm about submit my applications. The universities will send you links for you to submit your letter. You should get links from the following universities: [Include a list.] Thank you so much for writing on my behalf!"*
- Don't take it hard if someone says they feel they can't write you a good letter.

And now… 2020 is special.

- Subject GRE's are cancelled.
  - Pros: You don't have to take a really hard test that may not be a fair measure of your skill set. Admissions committees can't sort the spreadsheet of applicants by the "GRE Score" column and immediately eliminate the bottom 20%.
  - Cons: Hmm…
- Your application will be read much more closely.
  - You can (should) take all the time you'd have spent studying for the GRE and put it into the other parts of your application… make it exquisite.
- Universities are struggling financially.
  - There may be fewer funded positions available.
- Lots of uncertainty
  - The pass/fail grading… will "passing" be interpreted as "barely passing"?
  - Many students planning to start in 2020 deferred to 2021, so fewer students may be admitted this cycle.
  - Fewer students may apply this cycle.

Applying to grad school:
Overall

- Research the universities to which you think you might want to apply—scour the website, read faculty bios, about research groups there, grad students' websites, and take notes. (You can use things that appeal to you to tailor your cv and personal statement.)
- Ask us (faculty) for feedback on your personal statement & C.V.
- Try to make your application easy to read (no tiny fonts!). ***Make it easy for the person on the committee that reads your application to make a case for you*.**
- Remember you should be **selling yourself**; now is not the time to be humble! Don't lie or misrepresent anything, but be proud of your accomplishments and make sure the admissions committee knows how great you are. ☺

Good luck!!!

Annotated example c.v. And some more. And even more!

GRE Subject Test information

Find a grad program (AMS)

What's the first year like? (AMS)

And… the free membership in the

AMS American Mathematical Society

goes to….

Questions?