An Afternoon on Math & Stat Grad School

Part I: Department Info Session 3:30-4:15
Part II: Alum Panel Discussion 4:30-5:30
Plan for the afternoon:

Part I: Department Info Session

1. Overview of grad school + the application process
2. Tips for Success from Profs Chen and Talvacchia
3. “Flavors” of programs

Join us again from 4:30-5:30 for Part II: A Panel Discussion with Alum:

Maggie Regan '14, PhD
Becky Tang '18
Prairie Wentworth-Nice '18
Meghana Ranganathan '14
Heather Zhou ‘16
Christina Durón '12, PhD
What is grad school?

Matt Might’s Illustrated Guide to a Phd
By the time you finish elementary school, you know a little:

Matt Might’s Illustrated Guide to a Phd
By the time you finish high school, you know a bit more:

Matt Might’s Illustrated Guide to a Phd
With a bachelor’s degree, you learn even more and also gain a specialty:

Matt Might’s [Illustrated Guide to a PhD](https://mattmight.net/illustrated-guide-to-a-PhD/)
A Master’s degree deepens that specialty:

Matt Might’s Illustrated Guide to a Phd
Reading research papers takes you to the boundary of knowledge:

Matt Might’s Illustrated Guide to a PhD
And if you push at the boundary long enough:

Matt Might’s Illustrated Guide to a Phd
What is grad school?

M.S. or M.A. programs:
- Typically 1-3 years
- Focus on coursework
- May include “capstone” project
- May or may not be funded
- Goals of program (eg professional vs PhD preparation) vary

PhD programs:
- Typically 5-7 years
- First few years focus on coursework, transition to a research stage
- Concludes in a dissertation
- Funded (often with teaching responsibilities)
Application Package

- CV
- Letters of Recommendation
- Personal Statement/Statement of Purpose/Research Statement
- Test Scores
  - GRE General
  - TOEFL
  - GRE Subject

You should begin working on these materials well before application deadlines (generally late in the fall semester).
Tips for Success from Profs Chen and Talvacchia

- What have former Swatties done to be successful in getting into programs?
- What are the most important parts of an application package?
- What should sophomores or juniors be doing to prepare?
- What do you do if you don't get into any graduate programs?
- Why grad school?
Applying to grad school?

(some advice is specific to PhD programs in pure math)
Questions to ask yourself:

- Where do I want to spend the next 5-6 years?
- How do I want to spend the rest of my life?
## Important parts of application:

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<th>Coursework and GRE</th>
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<td>Take advanced courses, e.g. second semesters of real analysis and algebra; topics classes; honors classes; reading courses.</td>
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<td>GRE: study, take practice tests; aim for junior year to leave time for possible retake.</td>
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<th>Statements</th>
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<td>Programs want candidates who will succeed. Do you know what you’re getting into? Do you have a strong background? Have you done research or other independent work before?</td>
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<td>Start early, get feedback, edit!</td>
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<th>3</th>
<th>Recommendation letters</th>
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<td>Make sure faculty get to know you, and know about your career plans: participate in class, talk to your teachers after class, e.g. office hours. Write and present material clearly.</td>
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<td>(More on this on next slide.)</td>
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How to get a stronger letter:

A  Be active in the community
   - Participate in the problem solving group, take the Putnam, be active in AWM/W+iMS, math club, etc.
   - Give a talk, present a poster, attend lectures and meals, be on a panel, organize events, do outreach.

B  Be a good citizen
   - Do you help create a positive and supportive environment in and out of class? Have you been a grader or clinician? Do you work well with others, as well as independently?
   - See also (A)

C  Be professional
   - Ask early (at least a month), provide documents, explain where and why, ask for advice and feedback.
   - Create a doc with all info. Send reminder 1 week before due date.
3 other tips

1. **Apply for outside grants**
   NSF (National Science Foundation), NDSEG (National Defense Science and Engineering Graduate Fellowships), etc.

2. **Maintain a (free) simple professional website with your CV**
   e.g. Google Sites, WordPress, Squarespace, Weebly

3. **Gather information and use your network**
   Talk to alum, talk to profs (at Swat and elsewhere), use the internet
Good luck!
Types of programs:

- Pure Math
- Applied Math
  - Courses: Partial Differential Equations, Modeling, Probability, or Complex Analysis
  - Programs exist on an applied $\leftrightarrow$ theoretical spectrum
- Statistics or Biostatistics
  - Courses: Probability, Math Stat I & II, Linear Algebra, Analysis, CS
  - Programs exist on an applied $\leftrightarrow$ theoretical spectrum
- Data Science or Machine Learning
  - Courses: Probability, Linear Algebra, CS, Math Stat I & II
- Other quantitative-focused programs
How the department can support you:

Early in the process:
- Planning coursework
- Answering questions
- Researching programs
- Conferences and Society Memberships
- Funding opportunities

Later in the process:
- Help with personal statements
- Writing letters of recommendation
- Making decisions
Don’t forget: **Part II: Alum Panel Discussion 4:30-5:30**

Hear from recent alums about their current grad school experiences

Get more advice and ask more questions!