

## For those who think they might be interested in Graduate school in Math or a Math-related area

<http://geneseo.edu/~haddad/grad.html>

Start thinking about it this summer. Begin by looking into schools this summer.

Try to keep an open mind. Look at Math, Applied Math, Operations Research, Computer Science, Computational Math or Science, Scientific Computation, Financial Math, Bio-Math, Stats, Math Ed, (and less Math-oriented: Engineering, Theoretical Physics, Economics), etc. Look at the courses offered, degrees, and research currently being done by faculty. You will be working with one at some point. If you can't get accepted into one, the school might want you for another area.

Be honest about what you are interested in. If you are undecided, say so.

Think about studying for *Graduate Record Examinations (GRE)* this summer (there are 2: General – like SATs, and Math Subject), sign up for the GRE study group this fall, and take it. Focus on Calc 3 (Heap advice).

Do **not** send in Math Subject GRE scores until you know what they are. It's worth paying extra! Be prepared to have a low score.

### **Make yourself stand out from all of the other math majors who will be applying.**

This summer, do a *Research Experience for Undergraduates (REU)* or some kind of math research. Maybe try the *National Security Agency (nsa.gov)*? Or try to do a Directed Study this fall. Make sure you have done a presentation, preferably at some conference, if you can. Ask faculty for help with this.

Work in the *Math Learning Center (MLC)* or TA for a Math course (offer to do it for free if you have to, in order to gain experience!).

Consider taking the *Putnam exam* or participating in the *Math Olympiad*.

Think about a summer or semester abroad.

In the fall, be on the lookout for information on the *Nebraska Conference for Undergraduate Women in Mathematics*. <http://www.math.unl.edu/~ncuwm/13thAnnual/pastpartcomments.php>

### **Make sure you have all your ducks in a row.**

The courses you need depend on the area you are interested in. I can safely say getting *Math 325* (Real Analysis 2) and *Math 330* (Algebra) are good choices for **all** areas. Make sure you have some computing. Prob and Stats is good to have. Check out the programs you are interested in online. They often have what types of courses they are looking for, as well as a list of faculty and their areas of interest. They will also have course offerings and requirements posted so you can see what you will be getting into. The more preparation you get here at Geneseo, the better off you will be in grad school. Getting the minimal number of courses in Math required for the degree will not help you UNLESS you have a minor in some related area, like CS, Econ, Bio, Physics, etc. Broaden your interests and take a broad spectrum of courses.

Be prepared to ask for at least 3 letters of rec. (at least two in Math). Ask if the professor believes they can write you a *good* letter. Provide them with a transcript, your statement of purpose (letter of intent, etc.), and a resume (include jobs, intramural activities, sports, leadership positions, charities, etc.) Brag about yourself (in a nice way)! Give them at least a month or two to write the letters. Provide them with stamped addressed envelopes if you want them mailed it, or detailed instructions for sending them through the internet. Be prepared to waive your right to see the letter (it's a fairly standard practice). Gently remind them to sent the letters in one and two weeks before they

are due. **Thank them, and for goodness sakes, let them know what the outcome is when you find out, even if it's negative!**

Apply to at least one or two really good schools ("pie-in-the-sky" schools), 4-5 medium-level schools (e.g. places where our students have had success getting in and finishing), and 1-2 safety schools. Consider web ranking *US News and World Report*, and *PhDs.org*. Talk to students who have gone through the process, as well as, faculty if you need help deciding. Who? Me, Heap, Rault, Johannes, or your favorite prof.

Helpful sites (more are available on my website <http://geneseo.edu/~haddad/grad.html>):

<http://grad-schools.usnews.rankingsandreviews.com/best-graduate-schools/top-science-schools/mathematics-rankings> - Choose a specialty

[http://mathaware.org/profession/data/annual-survey/groups\\_des](http://mathaware.org/profession/data/annual-survey/groups_des)

<http://www.phds.org/>

<http://worldranking.blogspot.com/2009/07/top-mathematics-doctoral-programs.html>

Be sure to apply for the PhD even if you are unsure or know that you just want a Masters degree. Be sure to ask for funding (anything they offer!). These things make the school think you are serious. You can always turn it down if you don't want it. ***Most grad schools in these areas have funding available for good grad students that include a stipend to live on and a waiver of tuition.*** You don't want to pay to go to grad school if you can help it.

Think about applying for **National Science Foundation (NSF)** grad fellowships. These are due **in November**. **Department of Defense (DOD)** also has some. The deadline is **in December**.

When you get accepted: always visit the school. Many will pay for you to do so), and talk to the other grad students *away* from faculty. Ask about how cutthroat the place is and how accessible are the faculty. You **have** to like the program, the people, the location, and the package offered (in that order!). Ask how long it typically takes to finish and whether they guarantee funding for that time period. Most offer a teaching or research assistantship, and will waive tuition. The assistantship is typically enough to live on and you will get out of grad school with little or no debt! Ask what you have to do for the teaching/research assistantship. Ask when the qualifiers need to be taken. Ask if there are any computing requirements.

If you don't like it, you can always take the Master's degree and run or apply to another school. You are not obliged to stay there any longer than one semester or one year at the most. Remember, if you don't want to be there, they probably don't want you there and likely can find someone better suited to take your place.

## **Timeline.**

### **Summer of Junior year:**

REUs, Summers Abroad, Semesters Abroad, or some other experience.

Find an Internship program.

Begin looking at schools on the internet.

Begin thinking about GREs. [http://www.geneseo.edu/math/test\\_preparation](http://www.geneseo.edu/math/test_preparation) Think about taking them twice!

Make sure you are taking the courses you need to be taking. Ask your adviser or other faculty for help in deciding. Many are degree- or program-specific.

### **Early fall semester**

Sign up for GREs and start reviewing for Math Subject GREs. Take them for the first time to see what they're like.

Start talking to faculty about the schools you want to apply to.

Get their advice.

Start thinking about whom you want to ask for letters.

### **Mid-fall semester**

Narrow your list down to 10 or less.

Begin working on your letter/statement of intent. Show it to faculty members!

Start applying.

Warn faculty that you will be asking them for letters.

Take the GREs

### **Late fall semester.**

Take math subject GRE.

Finish your application.

Gather together your materials and give them to your letter writers.

Include resume, transcript, letter of intent, waiver, instructions with a list of schools, etc., and anything else your letter-writer asks for. Ask at least one-two months in advance to give yourself and the letter writers time to get organized.

### **Jan-Feb.**

Make sure all applications, transcripts, scores, etc. are in. Contact the school or the organization that sends them and verify they have all of your information. Include unofficial copies of these things as a precaution. Gently remind your profs to send in their letters.

### **March-April**

Wait.

When you are accepted, ask about visiting the campus. Come talk to one of us before you do it so we can prep you on what to ask. Ask about financial offers if they have not made them.

### **April**

Visit. Decide. Accept an offer.

Consider applying to grad prep programs: EDGE (women only) and IMMERSE if you are going to grad school.

## **Make yourself stand out via Organizations/Tutoring/Colloquia/ Research/Talks**

### **Applying**

### **Accepting**

### **Most programs are for juniors, such as REUs, PCMI, MTBI, etc.**

**Research Experiences for Undergraduates in Math**-this includes both theoretical and applied mathematics [http://www.nsf.gov/crssprgm/reu/list\\_result.cfm?unitid=5044](http://www.nsf.gov/crssprgm/reu/list_result.cfm?unitid=5044)

**The Mathematical and Theoretical Biology Institute** <http://mtbi.asu.edu/>

**Park City Math Institute** has summer programs for math research and math education  
<http://pcmi.ias.edu/summer-program/>

**Center for Discrete Math and Theoretical Computer Science**  
<http://dimacs.rutgers.edu/REU/>  
They have a US program and one in the Czech Republic this summer

**GWU Summer Program for Women in Mathematics**  
<http://www.gwu.edu/~spwm/>

**VIGRE Vertical Integration of Research and Education**  
<http://www.math.utah.edu/vigre/ugrad/reu/index.html>

### **Some are for sophomores:**

**The Carleton College Summer Mathematics Program for Women**  
<http://www.math.carleton.edu/smp/>

### **Some are for graduating seniors intending to go to graduate school.**

**EDGE** <http://www.edgeforwomen.org/>  
**IMMERSE** <http://www.math.unl.edu/programs/mctp/immerse/>

### **Others:**

**National Security Agency** - has summer internships for undergrads in math and related areas  
[http://www.nsa.gov/careers/opportunities\\_4\\_u/students/undergraduate/index.shtml](http://www.nsa.gov/careers/opportunities_4_u/students/undergraduate/index.shtml)

**Nebraska Conference for Undergraduate Women in Mathematics (NCUWM)**  
<http://www.math.unl.edu/~ncuwm/13thAnnual/pastpartcomments.php>

**Mathematics Advanced Study Semesters (MASS) at Penn State**  
<http://www.math.psu.edu/mass/>

### **Conferences:**

Seaway Meeting – Upstate NY (October/April)  
Saint Lawrence Valley Mathematics Symposium – Potsdam area (Fall)  
Joint Math Meetings – *varies (January)*  
*NCUWM – Lincoln, NE (January/February)*  
GREAT Day- Geneseo (April)  
Hudson River Undergraduate Conference – Albany area (April)  
Applied Math Conference – Buffalo (April)  
Math Fest – *varies (August)*

### **Math Organizations**

MAA-Mathematics Association of America  
AMS-American Mathematical Society  
SIAM-Society for Industrial and Applied Mathematics  
AWM-Association for Women in Mathematics  
YMN-Young Mathematicians Network  
INFORMS-Institute for Operations Research and the Management Sciences