

What to do if you are considering applying for graduate schools:

Take extra courses in your field if you are able. Our course requirements give you a basic undergraduate degree in math, applied math, statistics, or math ed, but graduate schools will be looking for more than the bare minimum. If you expect to take the math GRE subject test (for all programs in math, many in applied math, and a few in stat), consider taking abstract algebra and real analysis by the end of your junior year.

Students interested in a PhD in Mathematics should consider taking one or more of the following: a second course in algebra, a second course in analysis or advanced calculus, a course in topology, or Complex Analysis. Students considering graduate programs in applied mathematics should take a full year of Real Analysis, and Abstract Algebra is also recommended. In addition computing skills are of increasing importance, so you should learn as much programming as you can, for example by taking CSC230. For statistics, the most important course to add is Real Analysis – it is unlikely that you will get into a good program without this course in your transcript. Differential Equations and Abstract Algebra are the two next courses to include. Students considering graduate school in Mathematics Education should talk to Prof. Liebars or their MTT390 Instructor.

Get the best grades you can. Hopefully this goes without saying and requires no explanation!

General GRE exams. This exam is very similar to the SAT. You take it at a test center, on a computer, almost whenever you want (but you need to sign up for a date at a test center). You can retake the exam up to five times per year, with a 21 day break required between attempts. This exam is probably much less important than the subject test, but schools will expect you to have a very high math score and adequate verbal and writing scores.

GRE subject exam in mathematics: This is a specialized test in math, with 50% of the test on calculus (including differential equations), 25% of the test on algebra (including high school algebra, linear algebra, and abstract algebra), and 25% of the text on other topics (including real analysis, discrete math, topology, geometry, complex analysis, probability and statistics, and numerical analysis). Note that few students have the background to answer everything, but you will want to be able to answer as much as possible. You should study for this exam. You can download a practice book from the GRE subject test page on the ETS website:

<https://www.ets.org/gre/subject/about/content/mathematics>

The GRE subject test is a paper test, given in April, September, and October. (Note that April of senior year is too late.) You must register for the test. Registration deadlines are approximately 5 weeks in advance of the exam.

Get some research experience. Apply for REU's. Do research with a TCNJ faculty member, either during the academic year or through MUSE in the summer. Give talks on your research at TCNJ and at conferences, when possible. Write up your results, even if you aren't expecting the results to be published in a mathematical journal. Talk to your professor about publishing your results in a journal designed to publish undergraduate mathematics research.

Establish and document your ability to handle graduate level material.

This is more difficult for students at TCNJ than for students at institutions with graduate programs, but faculty making graduate admissions decisions will want to see that you have done this. If you are doing research with a faculty member, ask them to include exposure to some graduate level material and to discuss this in his/her letter of recommendation. Alternatively do a guided/independent study in your senior year which includes some graduate level material, and ask the supervising faculty member to address this in her/his letter of recommendation. Some REU's may include some graduate material, but most do not.

Consider applying for departmental honors. To receive honors, you must take a 493 research course with a faculty member either spring of your junior year or fall of your senior year. Following the research course, you will write an honors thesis, which will be read by three faculty members in the department, and give a talk on your research. This is a good opportunity for incorporating graduate level material into your undergraduate experience.

Timeline:

Sophomore year: Consider doing an independent or guided study with a faculty member. Consider applying for an REU or for MUSE, or explore math programs abroad. Talk to your advisor or the grad school advisor about your plans.

Junior year: Take some advanced courses, perhaps do research at TCNJ, apply for REU's for the summer, consider taking a first stab at the GRE subject test in April, consider taking the general GRE test this year or in the summer. Begin studying for the GRE subject test.

Summer before senior year: Attend an REU or do research through MUSE or take a summer graduate course at another institution if you can find one. It is unusual for grad courses to be offered in the summer, though. Study for the GRE subject test. Register for the September GRE test by mid-August. Take the GRE general test if you have not done so or if you want a better score. Think about areas of math which have interested you and explore graduate schools using AMS and school websites.

Fall of senior year: Register for the September GRE subject test by early August or the October GRE by mid-September. Study for the GRE subject exams (perhaps with others who will take the exam!) Consider taking a grad course at Rutgers. Take the GRE subject test. Take the GRE general test if you have not done so or if you want a better score. Take challenging courses. Take a research course, especially if you have not yet done so. Request letters of recommendation. (Good options are faculty who have seen your advanced work, who have supervised your research or independent work, who can document your work with graduate-level material, and perhaps who are likely to have ties with faculty at institution(s) in which you have a particular interest in a field in which you have interest). Finalize a list of schools where you will apply and check that you are on track for any requirements. Consider applying for fellowships, e.g. from NSF. Write your personal statement and research statement for applications. Begin applications. Oh, and keep doing well in your courses!

Late Fall and Winter break of senior year: Write and submit your applications. Deadlines range from December to March, depending on the institution. Many competitive programs have early deadlines.

Spring of senior year: Take a step back and forget about all of this for a bit. You will hear back from schools between January and April. Generally schools send out initial offers and initial rejections within a few weeks of the application deadline, and then they will send more offers if/when they see they have open seats. If you are not hearing from a school this means you are on a middle list, which is a good thing. Try to be patient. Once you have one or more acceptances, you will want to visit the grad school(s) where you are accepted. This will be important to your decision making process if you have multiple options.