

Suggestions for a Great Senior Project Experience

North Georgia Mathematics Curriculum Committee

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Start Early. Senior projects can be completed even by advanced juniors, in some cases. If possible, do not delay until your final semester. Also, begin thinking about topics at least one semester in advance. Considering visiting office hours of 2-3 faculty to get their input on your ideas.

Expect Weekly Meetings. Individual professors will have different expectations, but you should anticipate having at least one hour each week dedicated to meeting with your faculty advisor in his or her office. When projects are going well, the meeting schedule may be abbreviated by agreement with your advisor.

Expect Weekly Work. MATH 4950 is a one-hour course, and you should expect 2 - 4 hours of your time each week to be committed to developing your project and meeting with your advisor.

Timetable. Presentations typically occur on Academic Review Day. You should have an outline of your presentation and paper approved by your advisor at least four weeks in advance of this deadline. You should submit a rough draft of your paper to your advisor two weeks in advance, and should submit your slides for your presentation and final draft of your paper at least one week in advance.

Professional and Positive. Dress for success. When you look great, you feel great and tend to be more confident. Practice your entire presentation out loud at least twice, and practice your opening sentences at least five times. This helps get over any initial nerves, and you can start confidently.

Expectations

There is a syllabus for the course (ask any mathematics professor for it). Mentored by your faculty advisor, you will be required to accomplish the following:

1. Conduct an independent exploration in mathematics.
2. Communicate mathematical ideas using the English language (written and oral) as well as mathematical language.
3. Demonstrate the use of inductive and/or deductive reasoning skills by writing original proofs.
4. Select appropriate technological tools for a particular mathematical exploration, and determine their limitations.
5. Evaluate the results of a mathematical exploration.

One additional *suggestion* (not required on syllabus) is to find a problem that allows you to use skills from more than one area of your mathematics knowledge base.

Frequently Asked Questions

How can I decide on a topic for my Senior Project?

Think about what upper-division mathematics courses or topics were most appealing to you when you studied them, or some topic you would like to explore but haven't come across in your courses. Start discussing your ideas with multiple professors, learning which faculty have expertise in those areas and what ideas they might suggest for areas you could investigate.

How do I get enrolled in MATH 4950?

Once a faculty member has agreed to supervise your project, that faculty member will process your administrative enrollment into the course. You need to take care of this before the end of drop-add during the semester you would like to complete your senior project. You are allowed to work on your project early, if your advisor agrees.

How can I find an advisor for my Senior Project?

Just start asking faculty about your project ideas (see above), and learn who in the department might have relevant expertise. A list of faculty and their interests will be available soon (ask any math professor). If your interest is not listed, ask any faculty member who has time to discuss your project ideas. We are often capable of working well outside our expertise to help students explore an area of interest. Some students have a specific faculty member in mind that they would like to work with. In that case, you should start very

early, because faculty often get multiple requests per semester and can only work with one or two students at a time. And a word of caution: picking an advisor before choosing your topic means you have fewer choices about what to investigate. Please note that most senior project experiences are very positive for both student and faculty member, even when the two did not know each other very well at the outset.

How long should my presentation be?

Generally, about 20 minutes, with about 15 -18 minutes for the presentation and a couple of minutes for questions from the audience.

How long should my paper be?

Depending upon graphics, equations, and formatting, we expect papers to be approximately 10 - 15 pages minimum (12 point font, 1 inch margins, with plenty of white space per page for clean formatting of mathematical expressions, graphs and equations).

What is being assessed during my talk?

The talk demonstrates your ability to communicate mathematics in plain language, to showcase one or two original proofs, and to demonstrate any technology explorations conducted. The other expectations from the syllabus are generally assessed based on your paper.

What do you mean by "original proofs"?

We expect you to prove things you did not know how to prove before you began the project, without help from your advisor and without help from outside sources such as research papers, textbooks or the internet. Your advisor will likely evaluate your proofs for correctness once completed, but will only give very general suggestions about the proof outline before you attempt it. Also, your advisor will tailor the proofs you attempt to fit your interests and ability level. If you're stuck, your advisor may elect to give some hints. But the work should be yours.

What is the technology you're looking for?

You may use a program like Maple to generate graphics for your examples, to evaluate difficult computations, or to explore specific examples from your project. You might use graphics from programs like The Geometer's Sketchpad, Cabri, or an applet found online. You might use a programming language like java or C++ to create code to explore your problem, evaluate an algorithm or demonstrate the efficiency of an algorithm.

Who assesses my project?

A panel of at least three mathematics faculty who attend your presentation and read your paper will evaluate you. Your advisor is always a member of the panel.

Can I invite my friends to attend my presentation?

Generally, you may invite guests, but check with your advisor a couple weeks in advance to be certain.

After my talk, what kind of questions can I expect from my advisor? From other faculty?

Faculty tend to ask for additional details in areas where you presented an outline of findings, or about a crucial step in a proof that went by quickly. Often, faculty or guests will ask for clarification of definitions or an example of the object of the definition.

Can I work with another student on a joint project?

No, not generally. Occasionally, two or more students work on similar project ideas, but your project must stand alone based solely upon on your work, not anyone else's. You should plan to work independently. Any collaboration or assistance received should be approved in advance.

What if I fail?

Good news - this happens quite rarely. Students who meet weekly with their advisors and work hard all semester don't have problems earning at least a B on their Senior Projects. However, if circumstances warrant, students whose presentations and papers are deemed unsatisfactory are given until the last day of finals to revise and resubmit their papers. They must also present their project to the faculty panel again. The most common reason papers are deemed unsatisfactory is because they were not turned in, or turned so late that no feedback from faculty was available prior to the presentations. Working diligently throughout the semester and meeting your advisor's deadlines has proven (over the last decade or so) to be 100% successful in avoiding train wrecks.