

Math 399: Mathematical Problem Solving
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Welcome to your mathematical capstone experience. I'll be your guide. This course is not about learning new material *per se*, rather it is about using material you have learned as well as using your mathematical skills to follow known results you may need (but have not seen) to solve problems.

You can expect problems from calculus, number theory, basic geometry, differential equations, probability, combinatorics, abstract algebra, real analysis, and logic (not formal logic). Even if you have not had some of these courses, you should be able to research what you need to do the problem. In addition to computers, the library also has books.

Office Hours: MWF 8.20am-9.10am and 10.20am to 11.10am. If you can't make these, email me or see me to schedule an appointment.

Assignments: Assignments will be handed out every Monday and collected the following Monday (except around Fall Break and toward the end of the semester). They will each consist of 4 problems. You must use \LaTeX to write-up your homework solutions. I will host a \LaTeX workshop this Friday during class time (in the computer lab).

START THEM RIGHT AWAY. DO NOT WAIT!! YOU CAN EXPECT TO WORK ON THESE PROBLEMS FOR MORE THAN 20 HOURS EACH WEEK. NO MORE JERSEY SHORE OR FRANK DINING HALL. YOU SHOULD LIVE, BREATHE, EAT, SLEEP, AND DREAM THESE PROBLEMS.

Project: There will be a final project, which will be a *poster* presentation of your semester-long problem. This semester-long problem will be given to you in about a month.

Testing: In return for your continuous hard work, there will be no midterm and no final.

Grading: Homework is worth 70% and the final project is worth 20%. The remaining 10% is based on attendance and your homework presentations (see Rules of the Game, below).

RULES OF THE GAME

- You may use any material except other people, but be wary of webpages unless you can deduce their validity. There are *many* faulty explanations on the web.
- You should submit partial solutions of pertinent observations for partial credit.
- You will receive 2 grades for each problem: one for the solution and one for the write-up. VG = very good, G = good, BC = basically correct, NG = no good. A * on your problem means you will be asked to present your solution at the board. Numerically, VG = 3, G = 2, BC = 1, and NG = 0.
- Unlike most other classes, you won't be expected to get all of the homework problems. As a rule of thumb, if you get 2/3 of the problems you are doing quite well (Note: This does not necessarily mean you will get an A.)