Math 96 Syllabus

Fall 2026

Lecture: Friday 2:00-2:50pm AP&M B412
Course Webpage: `http://cseweb.ucsd.edu/~dakane/Math96/`

Professor: Daniel Kane
Email: dakane "at" ucsd.edu
Office Hours: Monday 12:30-1:30pm in AP&M 7131 or by appointment.

Course Description: Math 96 will cover basic techniques in mathematical problem solving with a view towards improving performance in the William Lowell Putnam Competition.

Prerequisites: A passing grade in Math 20A or equivalent.

Exams: There will be no formal final exam for the class, but students will be expected to sit through at least two of the four parts of the Putnam competition, held this year 8:00-9:30am, 9:45-11:15am, 1:00-2:30pm, and 2:45-4:15pm on Saturday, December 5th. Note that this is the first Saturday of finals week, so please check your final exam schedule to make sure that you will be able to make it. In the past some teachers of other classes have allowed students to take their final late in order to participate, but unfortunately, the Putnam itself cannot be rescheduled.

Details about registration will be available shortly.

Homework: Homework we will be due *at the start of class* each week except for the first week, Thanksgiving week, and the last week of the quarter. Please be sure to submit homeworks by the start of class, as late submissions may not be accepted. If you cannot make the beginning of class, you may have another student turn it in for you, or arrange another method to get it to the instructor on time. In order to pass the class students will be expected to finish at least six out of the eight homeworks. Homeworks will typically be of one of two types, usually alternating between them between weeks:

- Problem solving homeworks: Here students will be asked to solve one problem from a list of practice problems (though if you put in a solid effort and cannot solve any, I will usually accept notes on what you tried).
- Solution writing homeworks: Here students will be asked to write an easy-to-follow, correct and well-written proof for a problem solved recently in class.

Write-up Guidelines: All homework questions will require you to write complete mathematical proofs. Also be sure to:

- Write your name on the top of the submission.
- Clearly designate which problem you are solving.
- If your submission is more than one page long, make sure to number all pages and staple them together.
- Write legibly.

Collaboration Guidelines: Students are encouraged to collaborate on homework assignments. You should feel free to discuss the problems and talk about how to come up with solutions, or about how to structure proofs. On the other hand, you are expected to write up your solution independently of any collaborators, and you *should not* share written solutions to homework problems with other students before the homework deadline. If you do collaborate with other students on the homework, you should make sure to list any collaborators that you had. Additionally, since this is a course focusing on individual problem solving ability, it is strongly recommended that you spend at least an hour thinking about a homework by yourself before discussing it with others.

Use of Outside Resources: You should not attempt to search for homework solutions online or by asking an artificial intelligence for help, doing so will be considered academic dishonesty.

Commencement of Academic Activity: If you need certification of commencement of academic activity for financial aid purposes, please fill of the Canvas quiz by the end of the day on October 9th.

Academic Integrity: Academic integrity will be taken very seriously be the course staff. Breaches of integrity may have broader consequences outside of the assignment in question. The following will all considered to be breaches of academic integrity:

- Collaboration on homeworks beyond the scope outlined in the section above (including sharing of homework solutions with other students before the homework deadline).
- Failure to cite collaborators on homeworks.

Grading: Grading will be pass/fail. The requirements for passing are:

- Submit reasonable solutions on time to at least six of the eight homeworks.
  AND
- Sit through at least two of the four sessions on the Putnam (you are not required to solve any problems on it).

Lecture Schedule: Lectures will alternate between two types:

- Technique lectures: Here the professor will discuss basic results in an area and some of the techniques applicable to solving problems in this field.
- Problem solving lectures: Here the class will be provided with a list of problems, that we will attempt to solve via group discussion moderated by the professor.

Below is a rough schedule for topics covered in the class:

September 25th	Techniques: Basic problem solving strategies
October 2nd	Techniques: Combinatorics
October 9th	Practice: Combinatorics
October 16th	Techniques: Number Theory
October 23rd	Practice: Number Theory
October 30th	Techniques: Polynomials
November 6th	Practice: Polynomials
November 13th	Techniques: Calculus
November 20th	Practice: Calculus
November 27th	Thanksgiving
December 4th	Test Taking Strategy
December 5th	Putnam Exam