

Problem Solving in Math (Math 43900)

Fall 2019

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The 2019 William Lowell Putnam Mathematical Competition will take place on Saturday, December 7, 2019. Every year, around 4500 US & Canadian undergraduates from around 550 institutions participate in the competition, which takes place on-campus.

The competition consists of two three-hour sessions (morning and afternoon), with each session having six problems. The problems are hard, not because they are made up of lots of parts, or involve extensive computation, or require very advanced mathematics to solve. They are hard because they each require a moment of cleverness, intuition and ingenuity to reach a solution. Typically, the median score out of 120 (10 possible points per question) is 1! The Putnam Competition may be the most challenging and rewarding tests of mathematical skill that you will ever encounter. See <https://www.maa.org/math-competitions/putnam-competition> for more information, including information about prizes and recognition for high performers.

To help prepare students for the Putnam Competition, the math department runs the 1 credit course Math 43900, which meets Tuesdays, 3.30pm-4.20pm. Each meeting will (usually) be built around a specific theme (pigeon-hole principle, induction & recursion, inequalities, probability, etc.). We'll talk about the general theme, then spend time trying to solve some relevant problems. At the end of each meeting I'll hand out a set of problems on that theme, that you can cut your teeth on. Usually we'll begin the next session with presentations of solutions to some of those problems. On occasional meetings, I might give out a problem set at the beginning, and have everyone pick a problem or two to work on individually for the meeting period (a sort of "mock Putnam").

The grade for the class will be determined solely by active participation in class (participating in class discussions, occasionally presenting problem solutions on the board) and by participation in the 2019 Putnam Competition.

Those who want to get the most out of the Putnam Competition are also encouraged to take part in the Virginia Tech Regional Mathematics Contest (also on-campus) which happens six weeks or so before the Putnam. More information on this competition is available at <https://www.math.vt.edu/people/plinnell/Vtregional/>.