



LACOL Teaching with Tech 2017

Lightning Round

Portable Lecture Capture

Steven Miller

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Using an iPad mini and video tracking technology, Steven Miller regularly records his lectures to share with students online. This approach contributed to the 'proof of concept' activities in LACOL's Upper Level Math project this spring.

Miller will demonstrate this portable rig in action.



Snapshot of webpage

Math 331: The little Questions: MWF 9-9:50am, Bronfman 103

Professor Steven Miller (sjm1 AT williams.edu), 202 Bronfman Science Center (413-597-3293)

My office hours: TBD and whenever I'm in my office ([click here for my schedule](#)). TA Sessions: Mon 7-8 B34, Thurs 7-8:30 Bronfman B34

Useful links:

- [additional comments](#)
- [articles/videos](#)
- [handouts](#)
- [homework](#)
- [links \(contests, books\)](#)
- [Mathematica programs](#)
- [objectives](#)
- [syllabus/general](#)
- [takeaways \(all classes\)](#)
- [welcome letter](#)

GENERAL INFO: This is a pre-core 300 level course; no advanced classes are assumed, but if you have not taken linear algebra please contact me. Using math competitions such as the Putnam Exam as a springboard, in this class we follow the dictum of the Ross Program and "think deeply of simple things". The two main goals of this course are to prepare students for competitive math competitions, and to get a sense of the mathematical landscape encompassing elementary number theory, combinatorics, graph theory, and group theory (among others). While elementary frequently is not synonymous with easy, we will see many beautiful proofs and 'a-ha' moments in the course of our investigations. Students will be encouraged to explore these topics at levels compatible with their backgrounds. The textbook for the class is Famous Puzzles of Great Mathematics by Miodrag S Petkovic (published by the AMS: Language: ISBN-10: 0821848143, available <http://www.amazon.com/Famous-Puzzles-Mathematicians-Miodrag-Petkovic/dp/0821848143> and <http://www.ams.org/bookstore-getitem/item=mbk/63>); see the [links page](#) for other recommended books (especially Polya's classic text).

OBJECTIVES: The goal is to use interesting problems, puzzles and riddles as springboards to great mathematics, as well as to uphold Williams' honor in several math competitions (Green Chicken, Putnam, VirginiaTech) in future years.

GRADING POLICY: Homework (typically due Fri): 15%, Midterm 30%, Final 30%, Class Participation: 10%, Project Euler: 15%.

Week 13: May 8-12, 2017

- Video: Mon: Dominoes and the Harmonic Series: <https://youtu.be/LG-pPUYFhnE>
- Video: Wed: Egg Drop Recurrence: <https://youtu.be/z9tYmZXDe6Y>
- Video: Fri: Harmonic Sums, Teller Problem, Grid Game: <https://youtu.be/uYr8polXE-M>
- Some takeaways from all classes: https://web.williams.edu/Mathematics/sjmillier/public_html/takeaways/TakeAwaysAllClasses.pdf

Sample video:

Math 331: <https://www.youtube.com/watch?v=TGJtH7K-mXs&feature=youtu.be> (go to 4:16)

