

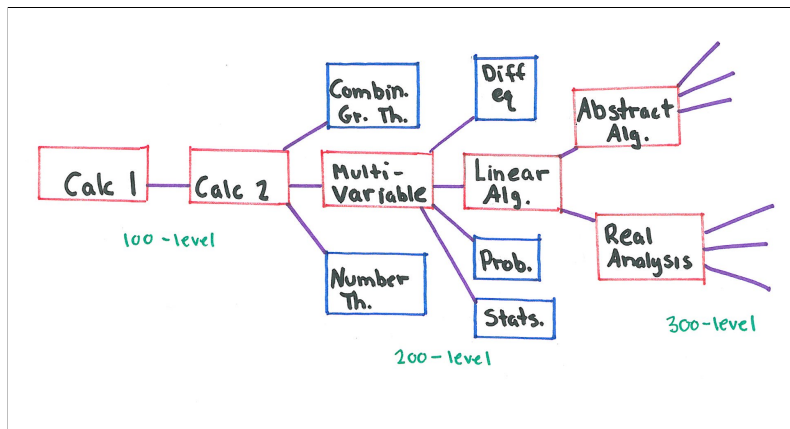
Building Community in FYS Number Theory to Increase Student Persistence in STEM Fields

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PLTC Mellon Workshop
May 8, 2018

Snapshot of Mathematics Department Curriculum



Increasing numbers of students enter at Multivariable or beyond.

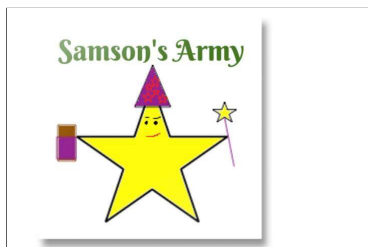
FYS as a landing place for advanced students

Seven years of FYS classes with 5 different professors

- 2017–18: Number Theory
- 2016–17: Euler
- 2015–16: Number Theory (IBL)
- 2014–15: Cryptography and Privacy
- 2013–14: Number Theory
- 2012–13: Euler
- 2011–12: Mathematical thought and proof (IBL)

2013 FYS

- Formed close community (open study group, mascot)
- Supported one another
- Chose to take math classes together throughout four years in college



Our class community helped them manage the bumps of upper-level math

Goals of my Mellon Project

- To foster a strong class community in my Fall 2017 FYS
- To have students recognize the value of collaboration and community in mathematics
- To increase persistence in STEM courses for students with interest in STEM

Student Comments from Reunion/ Focus Group

- They liked group work during class time and said they would have had a hard time initiating it themselves.
- Groups at random, a positive. You could be with anyone.
- It added to the community aspect that we started at the beginning, built the knowledge together.
- Knowing there are courses like number theory sustained them in less enjoyable classes.
- Advising: They remembered my advice. Several said that when things went wrong it was because they had not followed my advice.
- One student was a driving force in gathering the others together.

Advanced planning for Fall 2017 FYS

- Used Mellon Foundation funding for course planning with an algebraist colleague (Alex Diesl).
- Worked with assessment specialist to design surveys to measure student perceptions of importance of community and collaboration in math.
- Challenge: How to create community in absence of a student ringleader?

Features of my FYS in Fall 2017

Be intentional in fostering collaboration and community

- Used class time to talk about transition to college and strategies for success.
- Lots of group work/active learning.
- Develop the material together from basics.
- Tried to cultivate student leaders.
- Individual “check in” appointments to supplement office hours.
- Flexibility in adapting to what worked for them.

What students found valuable

- Learned key mathematical skills
(how to start a difficult problem, constructing logical arguments, thinking in a new way)
- Small class fostered lots of interaction.
(They felt participation was required because the class size was small.)
- Helped transition to college
(check in meetings, study tips, explaining how course registration and finals work, etc)

Next steps and challenges for future

- Track students over next few years
- Import features to other classes
- More teamwork with colleagues

Advice for Wellesley Faculty

- Find ways to collaborate with colleagues at Wellesley (mini team-teaching experiences)
- One thing leads to another ... (Talk at Joint Mathematics Meetings)
- Getting a Mellon Grant will motivate you to do something you want to do (but might not otherwise find the time)