Math 310: Choice and Chance

“Every day the media showers us with news, analysis, and op-eds, which use and misuse numbers to arrive at various far-reaching conclusions. The objective of the course is to help students to acquire some basic mathematical skills to navigate in the sea of numbers. Often, this boils down to understanding a few fundamental, ancient, and deep concepts: randomness, fairness, coincidence, and bias.”

Individual Textbook Description

In place of exams, you will compile your worksheet solutions into the form of a textbook. (15% “midterm”, 30% “final”)

- Midterm feedback: instructor randomly chooses two chapters (of 1-4) to grade.
- Final grade: students choose one chapter to be graded (of 5-9) and instructor randomly chooses one to grade.

Challenges and Changes

Too much time/work. Change? Class textbook or small groups. However, then students aren’t accountable for all material.

Communicating expectations. Change? Improved rubric. However, it’s challenging to express expectations perfectly until confronted with weak examples.

Math 431: Euclidean Geometry

“This course gives students the tools to tackle an unpredictable array of geometric topics they might encounter in their future teaching practice. The aims of the course include that (1) students become comfortable operating within an axiomatic development of Euclidean Geometry; (2) students become critical, proficient provers and problem-solvers; and (3) students improve their mathematical communication.”

Class Journal Description

The Math 431 class journal, Communications in Euclidean Geometry, will be soliciting articles from you this semester. In the same fashion as professional mathematicians, upon submission, your work will be reviewed by a referee and you will be able to address their feedback. To be published, entries must be clear, correct, complete, and well-written.

Grade Guidelines (30% of course grade):

• Earning an A means having 6–8 published articles, at least two should be notably deep or challenging or creative.
• Earning a B means 4–5 published articles.
• Earning a C means 2–3 published articles.

Assignment Features/Goals

- Students can explore problems that most interest them.
- Students can tackle problems too hard for general homework.
- All students get “solutions guide” to all homework problems.
- Review process mirrors real journal process.
- Students have a polished artifact of class accomplishments.
- Students can see how other students write about mathematics.
- Students can see multiple, in-depth solutions to the same problem.
- Students take feedback into account much more readily than other homework.
- Students learn to typeset mathematics in LaTeX.
- High standard of mathematical writing and communication.

Challenges and Changes

Challenging workflow in review process. Solution? Create gmail address for “editor” and use labels religiously.

Student buy-in. Change? Sell idea early and often, get them to explain benefits themselves, make expectations reasonable.

Sign-up process. Solution? Make sure certain students don’t sign up for too many articles. Encourage multiple, distinct solutions.