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Numbers, Shape, Chance, and Change
A Freshman Writing Seminar

BY JULIA VAN DEVELDER

Many colleges and universities require their first-year students to take a course designed to develop their writing skills to a level deemed satisfactory for college-level work. And typically, such courses are offered by the English Department-- Composition 101 or something along those lines.



Students in a Freshman Writing Seminar
Photo: Holly Wilmeth

Vassar, too, has such a requirement. It's called the Freshman Writing Seminar. But it's not the sole responsibility of the English Department. Any academic department may offer a Freshman Writing Seminar. This year, half of Vassar's departments and programs offered at least one Freshman Writing Seminar. These have fascinating titles, like *Dynamic Women: From Bachelet to Ugly Betty*, offered by Latin American and Latino/a Studies, or *Disaster and Disorder: The New Normal*, offered by the Sociology

Department.

One you might find surprising is called Numbers, Shape, Chance, and Change, taught by Professor Charles Steinhorn in the Mathematics and Statistics Department. It's one of only two courses in the curriculum that can satisfy either the Freshman Writing Seminar requirement or the Quantitative Course requirement, but according to the professor, nearly everyone who takes it opts for the writing credit.



Ken Ono, mathematics prof at Emory University, shared his experiences with students in a Freshman Writing Seminar called Numbers, Shape, Chance, and Change.

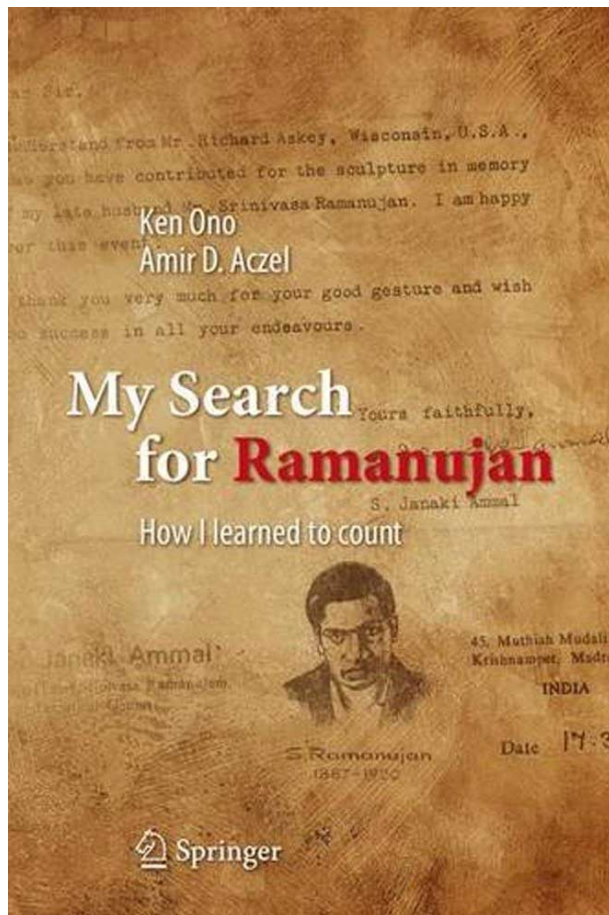
Photo: Karl Rabe

“Why do I teach it? Mathematicians need to know how to write the same as everybody else,” says Steinhorn. “If you’re writing a grant proposal, you need to know how to write clearly and succinctly. If you write monographs or texts or if you submit your work for publication, you need to know the format that’s appropriate to your discipline.

“My colleague John McCleary and I developed this course years ago, and

since then, other members of our department have offered variations based on their own areas of interest and expertise. I'm not going to pretend that it's not a challenge for me or other members of my department to grade essays, but, as a department, we feel it's important. We take this idea seriously--that writing is a skill that spans all of the disciplines."

Furthermore, even if you pursue a career in mathematics, you may someday want to write a memoir, as did Ken Ono, mathematics prof at Emory University. Ono's book, *My Search for Ramanujan: How I Learned to Count*, is one of the required texts for the course, and students had the opportunity to meet him (and get their books signed!) when he came to their class as a guest lecturer this fall.



[Read the review](#)

Ono's visit also included a screening of the recent film *The Man Who Knew Infinity*, starring Jeremy Irons and Dev Patel. Ono was the mathematics

consultant on the film, a biopic of Srinivasa Ramanujan, an Indian mathematician with little or no formal training in pure mathematics who made astonishing contributions to the field during his brief life. In the film, Irons plays G.H. Hardy, the English mathematician who recognized Ramanujan's brilliance and brought him to Cambridge to collaborate with him.

Before the screening, the students also read Hardy's essay, *A Mathematician's Apology*, written after his creative powers had declined as a justification of his life's work as a pure mathematician. And after the screening, Vassar film prof Travis Wilkerson joined Ono and Steinhorn on stage for a panel discussion. So the students got to learn a little bit about film analysis in addition to number theory (Hardy's and Ramanujan's primary focus) and the history of mathematics.

"I'd never heard of either Hardy or Ramanujan before I took this course," says Nora Culik '20. "It was really cool to read these nonfiction books and then to see how those were interpreted by the filmmakers. And then to get to actually have a conversation with the author--that was really amazing."

The course is structured around three areas of mathematics--number theory, computation and the limits of computation, and probability and statistics. Each week, students complete either a problem set or a writing assignment. "I like to give them a variety of assignments," says Steinhorn. "For example, one of the assignments is a diary entry, written in the persona of one of two mathematicians based on an imaginary conversation they might have had at a 'high table' dinner at Oxford. When we get to the unit on probability and statistics, I have them write an op-ed about polls. The final paper is a piece of mathematics or science journalism. So I'm trying to get them to become aware of the different kinds of writing and the importance of figuring out who your audience is."

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From East Lansing, MI, Culik says that she chose this particular Freshman Writing Seminar because math has always been one of her favorite subjects. “This class has really solidified my love of mathematics, and it’s broadened the way I think about mathematics,” she says. “Math and the creative arts are a lot more similar than most people think. Once you get past algebra, there’s a lot of creativity in mathematics. There’s a beauty to it.”



Charles Steinhorn, Professor of Mathematics
Photo: Karl Rabe

Not surprisingly, most of the students who choose this course have a strong background in mathematics, but for many, this course is their first exposure to higher level concepts. “The traditional pathway in secondary school begins with algebra and then moves through geometry, pre-calculus, and calculus,” says Steinhorn. “I choose topics that they probably will not have seen before and readings that give them a sense of how mathematicians think about what they do. The idea is to make them aware of the broad scope of the mathematical sciences and at the same time to

make them more skillful editors of their own work.”