



VENI VIDI WIKI Beezer saw the need for an infinitely adaptable college algebra text. His *First Course in Linear Algebra* is available cheap from an on-demand printer, or free online in a version that is updated frequently by users.

pedagogy

You've heard of talking books; this one's 'alive'

And it might just be the next big thing in textbooks

When Hollywood portrays mathematicians, we typically see a lone genius working in a darkened classroom, the tap-tap-tap of chalk against blackboard the only sound. But if movie moguls made a film about Puget Sound Professor Robert Beezer and his new textbook, *A First Course in Linear Algebra*, they'd need to throw open the doors, let in some sunshine, and hire dozens of extras.

OK, so a Hollywood movie about a math textbook is pretty unlikely. But Beezer's book *is* worthy: In its own way it's as revolutionary as moveable type. For starters, anyone, anywhere can access the book for free on the Internet and print as many copies as they need. (Professor Beezer, a member of the mathematics and computer science faculty at UPS since 1984, does charge \$25 for an 800-page, print-on-demand copy, a bargain at today's textbook prices.)

In addition, it's an open-source textbook, which means content contributions are welcome from mathematicians around the globe. On a typical day, the book's Web site (<http://linear.ups.edu/>) is likely to get as many combined visitors from Romania, Canada, Sin-

Photojournal by Ross Mulhausen



MARCH 30 – EAT YOUR WORDS The Collins Memorial Library sponsors an Edible Books competition, in which students and staff recreate book titles using food. Here: *War and Peas* (groan) submitted by cataloging specialist Patt Leonard.



APRIL 12-15 – A FINE HOW-DE-DO Who doesn't like Gilbert and Sullivan? Students pack 'em in for four superb performances of the Mikado.



APRIL 25 – THANKS, FROM THE TOP Ronald Tschetter, director of the Peace Corps, is on campus to present President Thomas with a plaque recognizing UPS as the top producer of Peace Corps volunteers among small colleges.

gapore, and Ireland as the United States. And with error corrections a mere click on the keyboard, *A First Course in Linear Algebra* delivers an unprecedented level of accuracy and reliability.

“The Internet means that we don’t have to do things the way they’ve always been done,” Beezer says. Users don’t have to wait for a second edition to get updates, although Beezer plans to keep tight editorial control on the book. “It wouldn’t work to have it like Wikipedia,” he says, “But I believe ideas want to be free.”

From notebook to textbook

Beezer started writing the book in 1986, although he didn’t know it then. He was teaching a post-calculus linear algebra course, something he would repeat 16 times until June 2002. By the spring of 2003, he had converted his class notes to an electronic version to ease the revision process, and “It was only a short leap to then decide to distribute copies of these notes and examples to the students,” he writes in the preface. “As the semester wore on, the notes began to look less like notes and more like a textbook.”

Spare changes

About the same time, he was growing weary of changing his class notes to comply with the vagaries of publishing. “I felt that books were changing for no apparent reason—or worse, going out of print,” Beezer explains. “One day when a salesperson was urging me to try a new one, I thought, ‘It doesn’t need to be this way.’”

A sabbatical in the spring of 2004 gave him the time necessary

to take the project further. He officially launched *A First Course in Linear Algebra*, or “Beezer in a Box” as some students have dubbed it, in December 2006.

While the core of the book is basically complete, the number of exercises, topics, and applications continue to grow, both from Beezer and contributing mathematicians; the textbook currently includes 223 theorems and 113 definitions. Andy Zimmer ’08 who is already planning a Ph.D. in mathematics, wrote an entire section on the matrix trace, something he describes as “a neat tool for examining matrices.”

Sequels and more

In movie parlance, the book is a sleeper; that is, it has a small following that is expected to steadily grow. Because the book came out mid-school-year, last December, Beezer anticipates more users as professors search out next term’s textbooks. And he understands that trust must build as they review—and even contribute—to the contents. “Free on the Internet—that could be written by a crackpot,” he adds with a chuckle. “Professors really need to look carefully.”

Sequels to this story are already under way, like the one involving a computer scientist with a National Science Foundation grant to write software that converts electronic XML text into Braille. She’s talking with Beezer about making his textbook readable by the blind.

“I don’t know where all this could lead,” he says. “But I know that good things happen when you put ideas out there and say, ‘Here it is, and it’s free.’” — **Lynda McDaniel**



APRIL 27 – THE LIGHT FANTASTIC Kelsey Pobanz ’08 helps youngsters from Washington Hoyt Elementary School learn about the colorful spectra of various gasses by viewing them through an emission lamp with diffraction grating.



APRIL 27–May 14 – SENIOR ART SHOW The work of this year’s 20 graduating studio art majors is on display in Kittredge Gallery. Here: paintings by Maggie McProud ’07.