TRINITY SCHOOL AT GREENLAWN LAUNCHES CUTTING-EDGE TECHNOLOGY INITIATIVE IN COOPERATION WITH NOTRE DAME

A cooperative effort between Trinity School at Greenlawn and the University of Notre Dame is giving Michiana high school students an unparalleled opportunity to develop sophisticated computer programming skills for mathematical and scientific applications.

The Trinity Computing Initiative gives juniors and seniors laptops for personal use and trains them in MATLAB, a powerful, modern, easy-entry programming language. The coursework was designed by Dr. Craig Lent, Freimann Professor of Electrical Engineering at Notre Dame.
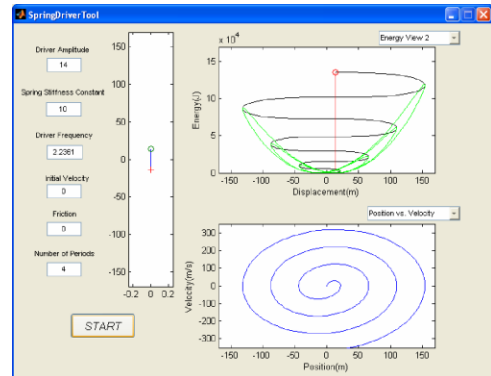
"Trinity School is, as far as I know, the only school in the nation where all students are taught to write sophisticated computer code for applications in mathematics and science," said Lent, who has more than 15 years of experience using MATLAB for teaching undergraduate engineering.

Lent won Notre Dame's Kaneb Award for Outstanding Teaching in 2000 and again in 2006 for his innovative effort developing MATLAB-based courses. He has taught the junior course at Trinity School and trained Trinity faculty as MATLAB teachers. "The Trinity Computing Initiative has

several aims," said Trinity president Dr. Kerry Koller. "Its first and primary aim is to energize high school science and math study with hands-on computer programming of graphical tools and displays. Students find this a creative, challenging and engaging approach."
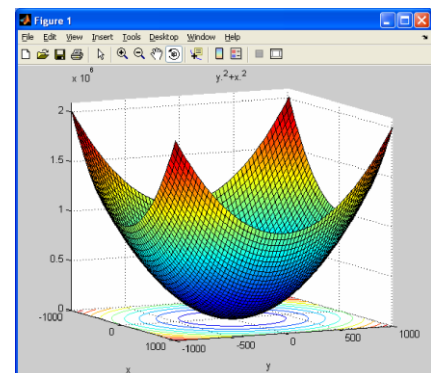
It's working for junior Mariel Rose. "I enjoy MATLAB because it is cool to learn how to make a computer program and then see it work right," she said. "It is interesting to see how computers work and how programs are made."

"My experience with MATLAB has been very positive," agreed senior John Preuss. "My education

in MATLAB gave me the opportunity to work this past summer in the Electrical Engineering Department at the University of Notre Dame, which is the greatest job experience I have ever had." Koller said a second aim of the initiative is to enhance the student's ability to visualize difficult concepts in multivariable calculus. Those concepts are used in the senior year physics course in a powerful way to study electricity and magnetism.

"This has transformed what was drudgery in previous years into 'ah-hah' moments this year," said Mooney, who teaches the senior course.

"The MATLAB program I wrote in junior year helped me more fully understand damped harmonic motion, a topic we are currently studying in 12th grade physics," senior Joseph Cramer said. "I was able to see the effects on the motion of the mass connected to the spring by changing the values of the damping constant, the spring constant and the mass.   In the 12th grade math class I enjoyed being able to visualize 3-D plots in multivariable calculus by putting the functions in MATLAB. MATLAB makes it easier to see what plots look like and what you are trying to find with the calculus equations."

Koller said the Trinity Computing Initiative responds to national and regional concerns about science and engineering education. "While much of the economic growth and stability of the United States depends upon a work force well trained in science and engineering, the fact is that the U.S. does not prepare nearly enough professionals in science and engineering to support that economic growth," he said, citing National Science Foundation reports that "the share of science and engineering degrees among first university degrees in the United States is lower than in other countries."

"In fact, the rapid expansion of jobs which demand science and engineering backgrounds was made possible because of the large number of foreigners who earned U.S. degrees and subsequently stayed in the country," Koller said. "We're trying to make a difference in the future of those trends by introducing our students to these challenging and exciting concepts."