

Eastern Kentucky University Mathematica Project

Paul Bland

Department of Mathematics, Statistics, and Computer Science
Eastern Kentucky University
Richmond, KY 40475-3133
matbland@acs.eku.edu

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The mathematics faculty at Eastern Kentucky University will use the computer algebra system Mathematica to enhance the teaching of calculus, linear algebra, and differential equations. This will be accomplished through non-traditional instruction which will take place in a technology classroom which has been established with an NSF-ILI grant. The emphasis of the program is to have students explore problems of such computational complexity that they will have to use Mathematica to analyze and solve the problems. It is felt that well structured experiences with Mathematica will lead to good problem solving skills and to a deeper and richer understanding of the important principles of mathematics. In the technology classroom students will be placed in an environment where they will be required to use approximations procedures, graphical analysis, and data analysis in order to solve problems. Computing will be used as a tool for experimental problem solving as opposed to the usual deductive and theoretical approach most often found in the traditional classroom setting. Students will be encouraged to work and learn cooperatively. Also, students will be required to submit written reports on their technology classroom projects.

Mathematica materials will be developed for use in teaching calculus, linear algebra, and differential equations. The faculty plans to build on materials developed under other NSF grants as well as developing new materials. New Mathematica materials developed will be made available to the mathematical community upon request.