

Interactive Learning of Mathematics and Computer Science in a Distributed Laboratory

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We report on the development of an interdisciplinary laboratory course for mathematics and computer science that channels some of the recent technological advances in communications and computations into the undergraduate curriculum.

The course content has been designed for the junior/senior level of the mathematics and computer science curricula, and it builds on topics and concepts in the sophomore level core of both fields. The stated goal of the course is that students learn to use a computer algebra system (Mathematica) to solve problems arising in their major field of study, e.g. in engineering, physics, statistics, mathematics, and computer science. All students are expected to complete and present a major project at the end of the course and they choose a project from their major field of study.

The teaching model is a laboratory course based on an interactive text that has been written specifically for the course. Extensive use of electronic communication allows the laboratory to be located where a student and a computer running the software interact, and where a connection to the Internet is possible.

The course has been offered in Fall 94 and in Fall 95 simultaneously at three very different academic institutions in Southeast Michigan, The University of Michigan-Dearborn, Eastern Michigan University, and Siena Heights College.

We will describe the course, the content, and the experiences teaching it at the three institutions. Course materials, an interactive text for the course, an instructors manual, and a manual of suggestions for student projects are expected to be published and will be available for inspection at the meeting.