

College Algebra with Interactive Computer Software

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Course Description

College Algebra is a course which includes solving equations, graphing functions, and developing problem solving skills. The course serves as a prerequisite for statistics, pre-calculus, and calculus courses. It provides the necessary background for mathematical topics in courses offered by other departments.

Reason for Course Selection

The philosophy for this course selection is that college algebra should be a pump not a filter. Not only will students be better able to use mathematical models pertinent to their other studies, but their increased analytic and problem solving skills will have broad applications.

Students in elementary and middle school education can be profoundly influenced by the style of instruction experienced in this course. Because of the convergence of curriculum reform in high school mathematics and college calculus courses, this is a most opportune time to make improvements in the college algebra course.

Course and Use of Technology

In this project, interactive instructional computer software and pedagogical models are used in an open classroom setting. Students are placed into small groups with the instructor acting as a facilitator/mentor. This setting is a reform to the traditional college algebra classroom. Rather than traditional teacher centered lecture methods, class material are presented in StudyWork files. These files contain text, computations, equations, and graphs. The computations, equations, and graphs are "live". This allows the student to change values and immediately see the results. Furthermore, this provides the student with as many examples as they want or need. The materials presented encourage students to experiment, and lead them to the discovery of mathematical concepts.

Results

The use of computer technology to deliver materials at individual rates and to provide customized interaction are key elements of this course plan. The use of this type of technology engages students actively in the material. The use of computers to present material to small groups of students provides several benefits. Students work at their own rate. They are engaged in the material through interaction with the computer software designed for this course and with other students in their group. Students stay on task exploring questions that occur to them, rather than questions they are not prepared for, have moved beyond, or are otherwise not interested in. It encourages conceptual learning rather than the rote use of formulas and algorithms.