

## Miami-Dade Community College

**Common Course Number:** MAE 3651

**Course Title:** Technology in the Mathematics Classroom

**Catalog Course Description:**

This course involves the study of technology as an aid to the secondary mathematics teacher. Activities include the application of graphing calculators, computer software packages, the Internet, and multimedia to enhance instruction and improve classroom management. The course addresses specific Sunshine State Standards, subject matter competencies, and pedagogy pertinent to the discipline and required for certification.

**Credit Hours Breakdown:** 2 Lecture hours

**Prerequisite:** MAC 2312 or department approval.

**Course Competencies:**

**Competency 1:** The student will demonstrate knowledge of the use of graphing calculators to enhance the learning of mathematics.

**Upon successful completion of this course, the student will demonstrate knowledge of the use of graphing calculators to enhance the learning of mathematics by:**

- A. Exploring properties of polynomial, rational, piecewise, and transcendental functions.
- B. Modeling data to generate curves of best fit.
- C. Using various internal functions (solve, mode, maximum, minimum, matrix, link, store, etc.) of the calculator.
- D. Showing the effects that changing parameters will have on the graphs of various functions.
- E. Creating and presenting a lesson that constructively uses the graphing calculator

**Competency 2:** The student will demonstrate knowledge of the use of available software packages for classroom management.

**Upon successful completion of this course, the student will demonstrate knowledge of the use of available software packages for classroom management by:**

- A. Setting up and monitoring a fictitious class using an educational software package.
- B. Creating and managing a grade book for a fictitious class using a spreadsheet program.
- C. Creating on-line tests and homework assignments for a fictitious class.
- D. Creating tests and handouts using a math editor

**Competency 3:** The student will demonstrate knowledge of the use of available software packages that enhance the learning of mathematics.

**Upon successful completion of this course, the student will demonstrate knowledge of the use of available software packages that enhance the learning of mathematics by:**

- A. Describing tutorial programs for secondary school mathematics.
- B. Applying a program such as Mathematica, Maple, or Geometer's Sketchpad, to design mathematics lessons.

**Competency 4:** The student will demonstrate knowledge of the use of the Internet to enhance the learning of mathematics.

**Upon successful completion of this course, the student will demonstrate knowledge of the use of the Internet to enhance the learning of mathematics.**

- A. Describing various online features that accompany textbooks such as online textbooks, online self-tests and quizzes, and online tutoring.
- B. Creating a web page similar to one that would be created by a secondary school teacher that would include links to the teacher's syllabi and homework assignments and other information that would help the students keep up with their coursework and responsibilities.
- C. Using search engines to locate sites that contain mathematically relevant information.

- D. Communicating with their classmates through e-mail, bulletin boards, and chat rooms.

**Competency 5:** The student will demonstrate knowledge of the use of multimedia to enhance the learning of mathematics.

**Upon successful completion of this course, the student will demonstrate knowledge of the use of multimedia to enhance the learning of mathematics by:**

- A. Preparing a presentation using a presentation software.
- B. Describing various multimedia hardware.
- C. Describing various multimedia software.

**Competency 6:** The student will demonstrate knowledge of the advantages and disadvantages of using technology in teaching mathematics.

**Upon successful completion of this course, the student will demonstrate knowledge of the advantages and disadvantages of using technology in teaching mathematics by:**

- A. Researching articles dealing with the advantages and disadvantages of technology in the classroom that appear in various mathematics educational journals, print or online versions.
- B. Comparing a lesson that uses a graphing calculator or a computer algebraic system with a lesson on the same topic that does not use the technology.
- C. Checking and comparing results obtained with a calculator or a computer with results obtained using algebraic methods, *i.e.*, exploring the difference between exact and approximate answers.