

UNIVERSITY OF THE INCARNATE WORD
SCHOOL OF GRADUATE STUDIES
MATH 6385
Instructional Technology in Mathematics and Science

Catalog description:

This is a three-hour course designed to promote the uses of hand-held and computer technology in both mathematics and science for grades 7-12. The course will familiarize participants with the use of a variety of graphing calculators, data collection devices, and computer software packages.

Context:

This course is designed to meet the requirements for the study of instructional technology in the Master of Arts in Mathematics Teaching, Ph.D.s in Mathematics and Science Education. It is open to classroom teachers, department chairs, curriculum specialists in math and science and technology coordinators. The course may not be repeated for credit. The audience consists of graduate students with experience in the classroom.

Course overview:

With their multi-representational abilities, modern technologies can help students visualize and explore concepts in mathematics and science. The caveat in both these arenas is that the teacher must be constantly vigilant to keep a proper balance between the effective use of a pedagogical device and the efficiency of a "black box" in the hands of students. This course will use a introduce the participant to a variety of graphing calculators. It will familiarize it participants with data collection devices used to gather and record data from a wide variety of probes, then downloading them to graphing calculators or computers. Software investigated may include graphing, spreadsheet, algebraic manipulation, and sketchpad programs. The participant will develop skills related to creating effective student materials for their classes using such programs.

Course outcomes:

After completing the course, students will be able to:

Recognize the effective roles of graphing calculators, data collection devices, and computer technologies in the classroom

Use more than one type of graphing calculator as a problem solving tool

Make informed decisions about the use of a variety of computer programs as teaching tools

Understand the strengths and weaknesses of hand-held and computer devices from a pedagogical point of view

Be informed about these technologies and serve as a resource in helping their schools invest in the proper tools for each course

Assessment:

Written exam, semester project

Written exam, semester project

Written exam, semester project

Written exam, semester project

Written exam, semester project

Approval date: May, 1998