

Course Outline for MATH 3971, Technology in Mathematics Education

MATH 3971 Technology in Mathematics Education (3 units)

Prerequisite: MATH 248 or [MATH 2031](#).

Examination of current technologies designed for teaching and exploring mathematics. Exploration of mathematics content and problem solving with technology. Consideration of what mathematics content is appropriate for incorporating technology. Emphasis on activity learning and applications. 3 lectures. Formerly MATH 300.

Course Learning Objectives	
1	Research effective uses of current and emerging technology for the teaching and learning of mathematics.
2	Choose appropriate technologies to solve and present solutions to challenging mathematics problems.
3	Research and develop plans for addressing the legal, ethical, and accessibility challenges involved with incorporating technology in mathematics education.
4	Communicate mathematics using appropriate technology.
5	Evaluate the educational potential of technology and choose appropriate technology for given problems.
6	Use problem solving technology to strengthen content knowledge for teaching mathematics.

Expanded Course Content

Textbooks, materials, and/or other resources
Class Notes and Workbook

Week	Readings	Topics of Discussion
1	Class notes and workbook	Introduction to technology to be used for the quarter which may include Desmos, GeoGebra, web based apps, Microsoft Excel and Google Sheets
2	Class notes and workbook	Topics in algebra: including linear and quadratic functions, families of functions
3	Class notes and workbook	Topics in algebra: including linear and quadratic functions, families of functions

Week	Readings	Topics of Discussion
4	Class notes and workbook	Topics in algebra: including patterns, relations, and functions
5	Class notes and workbook	Topics in algebra: including patterns, relations, and functions
6	Class notes and workbook	Adapting algebra activities to effectively utilize technology
7	Class notes and workbook	Topics in geometry: including constructions and animations
8	Class notes and workbook	Topics in geometry: including conic sections, parabolas, ellipses and hyperbolas
9	Class notes and workbook	Topics in geometry: including conic sections, parabolas, ellipses and hyperbolas
10	Class notes and workbook	Topics in geometry: including isometries, dilation, similarity, and congruence
11	Class notes and workbook	Topics in geometry: including isometries, dilation, similarity, and congruence
12	Class notes and workbook	Topics in probability and statistics: including permutations, combinations, and principles of counting
13	Class notes and workbook	Topics in probability and statistics: including measures of center and spread
14	Class notes and workbook	Topics in probability and statistics: including data analysis, linear regression and comparing data
15	None	Group project presentations

Method of Assessment

The possible methods of assessment are written individual examinations, quizzes, in-class worksheets or presentations, projects, and homework. One or more midterms and a cumulative final exam are required.

Instructional Mode

The instructional mode for this class is face-to-face. This designation means that the essential academic standards of the course require in-class student engagement, and thus remote instruction is not appropriate.