

**SOUTHERN CONNECTICUT STATE UNIVERSITY  
SCHOOL OF ARTS AND SCIENCES  
DEPARTMENT OF MATHEMATICS**

**MAT 595: SEMINAR IN MATHEMATICS EDUCATION  
COURSE OUTLINE**

**I. Catalog Description.**

Current issues in mathematics education. Scheduled summer semesters of odd years.

**II. Purpose.**

The purpose of the course is for students to research, present, and discuss materials related to a current issue in mathematics education. The instructor can choose an issue from a variety of areas, including, but not limited to, multicultural mathematics, problem solving, the NCTM Principles and Standards, the Common Core Standards, and incorporating historical topics into the mathematics classroom.

**III. Number of credits: 3 credits.\***

**IV. Mode of instruction:** The mode of instruction primarily is through student presentations.

Students will give a minimum of two presentations in class, and submit a final written project. Students are expected to participate in class activities and discussions related to these presentations. Depending upon the issue chosen, the instructor may also invite guest speakers to present to the class.

**V. Prerequisites:** None.

**VI. Technology.**

No particular technology is required, beyond knowledge of presentation software such as Microsoft Powerpoint and Word.

**VII. Course Objectives.**

Upon completion of this course, students will have demonstrated the following:

- Knowledge of current national and state issues impacting mathematics education at the secondary level.
- Knowledge of current recommendations for curricula changes, including proposals contained in the NCTM *Principles and Standards for School Mathematics* and the Common Core Standards as they apply to teaching mathematics at the secondary level.
- Knowledge of a wide range of literature resources appropriate for enhancing the teaching of mathematics at the secondary level.

- Knowledge of a particular area involving the teaching and learning of secondary mathematics.

**VIII.** Outline (assumes a five-week summer course, four days a week, two hours per day)

WEEK 1: Overview of course, presentation of instructor's research or discussion of current issues, presentation topics chosen

WEEK 2: Presentations and discussions begin

WEEK 3: Presentations and discussions continue, discussion of topics for final project

WEEK 4: Presentations and discussions continue

WEEK 5: Presentations and discussions conclude, final project due last day of class

**IX. Texts.** The actual texts/readings are selected each time in order to focus on current issues. The bibliography represents samples of texts/readings that can and have been used.

**X. Bibliography (grouped by issue studied, with sample texts for each)**

Multicultural mathematics

- Closs, Michael P. (ed). *Native American Mathematics*. Austin: University of Texas Press, 1986.
- Joseph, George Gheverghese. *The Crest of the Peacock: Non-European Roots of Mathematics*, 3<sup>rd</sup> edition. Princeton: Princeton University Press, 2010.
- Zaslavsky, Claudia. *Africa Counts: Number and Pattern in African Culture*. 3<sup>rd</sup> edition. Chicago: Lawrence Hill Books, 1999

NCTM Principles and Standards

- National Council of Teachers of Mathematics. *Assessment Standards for School Mathematics*. Reston: National Council of Teachers of Mathematics, 1995.
- National Council of Teachers of Mathematics. *Principles and Standards for School Mathematics*. Reston: National Council of Teachers of Mathematics, 2000.
- National Council of Teachers of Mathematics. *Professional Standards for Teaching Mathematics*. Reston: National Council of Teachers of Mathematics, 1991.

Common Core Standards

- <http://www.corestandards.org/the-standards/mathematics>

### Problem Solving

- Polya, G. *How to Solve It*, 2<sup>nd</sup> edition. Princeton: Princeton University Press, 1988.
- Schoenfeld, Alan. *Mathematical Problem Solving*. New York: Academic Press, 1985.
- Wickelgren, Wayne. *How to Solve Mathematical Problems*. New York: Dover Publications, 1995.

### Historical Topics in the Mathematics Classroom

- Berlinghoff, William. *Math Through the Ages*. Oxton House, 2004.
- National Council of Teachers of Mathematics. *Historical Topics for the Mathematics Classroom*. Reston: National Council of Teachers of Mathematics, 1989.
- Smith, Sanderson. *Agnesi to Zeno*. Emeryville: Key Curriculum Press, 1996.

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\*Justification for three credits: At present, two credits allows for one presentation per student, with a final written project. We can increase the breadth of knowledge by requiring an additional presentation, which could take the form of a group presentation, or single individuals teaching a sample lesson in which they incorporate the main issue of the course. The additional credit would also allow for more discussion time.