

Math 428 - SENIOR SEMINAR MATHEMATICS EDUCATION
Course Outline

Course Objectives:

The Senior Seminar in Mathematics Education has several objectives, serving both the student and the Department of Mathematics. For the student, this course serves as a capstone to the degree program and, as such, should help the student to review the contents, tie the courses together, and to consider philosophical and other general issues in the fields of mathematics and mathematics education. For the Department, this course aids in the assessment of the degree program by using student participation, performance, and opinions as checks on the achievement of the objectives and purposes of the degree.

Topic	Approximate Number of Weeks
What is mathematics? Elegance in Proof Where/How is Mathematics used?	3
History of Reform movement; Standards; Practitioner Journals	2
Technology in Mathematics Education (Calculators, Dynamic software and websites, CBL)	2
Algebra Strand, Connections and Representations	2
Reasoning and Proof; Case Studies of math classrooms	2
Assessment Principle Geometry Strand	2
Equity Principle, Communication Standard	1
Planning for your Profession: The real world of mathematics teaching	1

Required Texts:

1. National Council of Teachers of Mathematics, *Learning Mathematics for a New Century (2000 Yearbook)*, Reston VA: NCTM, 2000.
2. National Council of Teachers of Mathematics, *Principles and Standards for School Mathematics*, Reston VA: NCTM, 2000.

Grading: This course is graded S/U. A grade of “Satisfactory” requires active participation and satisfactory completion of all **six** assignments

Some specific objectives are:

1. To review contents of the mathematics courses to see connections and interrelationships in their individual curricula;
2. To stimulate mathematical thinking through problem-solving;
3. To help students recognize overarching themes and recurring concepts in mathematical content;
4. To encourage thinking about philosophical issues of mathematics and the intellectual and social position of mathematicians;
5. To review methodological content on the teaching and learning of mathematics;
6. To help students recognize the social and cultural role of mathematics education in the modern world;
7. To provide pre-service mathematics teachers opportunities to engage in activities directly related to future responsibilities as instructional decision makers in the classroom (such as designing curricular and assessment activities)
8. To guide pre-service teachers in seeing their role in the community of mathematics educators and associated benefits and responsibilities of this role;
9. Through student performance in class, in written assignments, and on a survey questionnaire, to give the Department of Mathematics evidence to assist in assessing the degree program in mathematics education.