

**COURSE OUTLINE- EMAT 2000**  
Foundations of Mathematics Education  
Spring 2008

**General Information**

Instructor	Douglas P. Griffin
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Classroom	114 Aderhold Hall
Meeting Times	Tuesdays & Thursdays 11:00-12:15

*Role of mathematics in society; contemporary issues in mathematics education; role of professional mathematics educator, including ethical and effective practice; social, historical, and philosophical perspectives and methods of inquiry in analysis of mathematics education issues; and sociological and psychological bases for learning mathematics. Technologies used in teaching mathematics.*

**Overview**

This course introduces the field of mathematics education to prospective secondary school mathematics teachers. As the undergraduate entry course into the profession of mathematics teaching, the basic purpose is to provide an overall framework for your future professional development as a knowledgeable, competent, and effective classroom teacher. We will focus on basic issues of teaching such as beliefs about teaching and their origins, the construction of a high quality mathematics task and lesson, investigation of present curricular emphases in school mathematics, and the conduct of an effective school mathematics classroom. We will emphasize both contemporary and historical perspectives related to philosophical, psychological, and social factors that shape school mathematics curricular goals and contents as well as classroom teaching practices. Our study will emphasize attention to the major content strands and the key pedagogical strategies that all secondary mathematics teachers should understand in order to foster conceptual and procedural understandings, quantitative reasoning, problem-solving abilities, and appropriate skills.

**Course Goals & Objectives**

To examine the nature of mathematics and its role in society

- To survey the psychological and historical bases for learning mathematics
- To examine the role of the professional mathematics teacher
- To explore contemporary issues in mathematics education
- To examine practices, theories, and debates surrounding teaching mathematics
- To explore a variety of technologies for teaching mathematics and issues in using technology
- To relate developments and changes in the school mathematics curriculum, and in pedagogy with the historical, cultural, and psychological forces operating within society
- To become familiar with NCTM and states standards for school mathematics
- To research and to discuss issues and evolving teaching practice related to the teaching and learning of mathematics
- To become acquainted with the professional community of mathematics educators in order to identify and evaluate teaching resources

**Some Readings**

Steen, L. (1988). The Science of Patterns, Science, 240, 611-616.

Stiff, L., J. Johnson, & M. Johnson (1993). "Cognitive Issues in Mathematics Education. In Wilson, P. (ed.) Research Ideas for the Classroom: High School Mathematics. New York: Macmillan Publishing Co., 3-20.

- McLeod, D. & M. Ortega (1993). Affective Issues in Mathematics Education. In Wilson, P. (ed) Research Ideas for the Classroom: High School Mathematics. New York: Macmillan Publishing Co., 21-36.
- Wilson, J., M. Fernandez & N. Hadaway (1993). Mathematical Problem Solving. In Wilson, P. (Ed.) Research Ideas for the Classroom: High School Mathematics. New York: Macmillan Publishing Co., 57-78.
- Shoenfeld, Alan H., "When Good Teaching Leads to Bad Results: The Disasters of "Well Taught" Mathematics Courses." Educational Psychologist, 23(2). Spring 1988.
- Davis, R., C. Maher, N. Noddings, editors(1990). Constructivist Views on the Teaching and Learning of Mathematics (JRME Monograph Number 4). Reston Va.: NCTM
- NCTM(1995). Assessment Standards for School Mathematics. Reston, Va: The Council
- Byers, Bill. "Dilemmas in Teaching and Learning Mathematics." For the learning of Mathematics 4(1),35-39.
- D'Ambrosio, Uribe. 1999. "Literacy, matheracy, and technocracy." Mathematical Thinking and Learning 1 (2), 131 -154.
- Davis, Brent. 1995. "Why teach mathematics: Mathematics education and enactivist theory." For the Learning of Mathematics 15(2), 2 - 9.
- National Council of Teachers of Mathematics. 2000. Principles and Standards for School Mathematics. Reston, VA.:National Council of Teachers of Mathematics.

### **Evaluation**

Students are expected to complete all assignments, and actively participate in all activities. Some activities and assignments will involve working with a partner or a group; some assignments will be completed individually. Points will be awarded as follows:

<u>Item</u>	<u>Points</u>
Participation/Attendance/Professionalism	15-25
Journal of reflections, problem solving activities portfolio	20-30
Midterm, Final	20-30
Research Project	15-20
Group Project	15-20

Attendance: All students are responsible for maintaining the highest standards of honesty and integrity in every phase of their academic careers. Participation in class discussions will be an important component of this course. One emphasis of this course is your professional development. Part of being a professional educator is being a good student. Being a good student involves more than just coming to class and completing assignments. It includes demonstrating a professional demeanor while in class. No rude or disrespectful behavior will be tolerated during class meetings. Disagreement during professional discussions is good and often productive in developing a deeper understanding of the concepts being discussed. Disagreement in a discussion does not warrant disrespectful language or behavior. Regular and punctual attendance is expected. Excessive absences (3 or more hours) without excuse will drop your grade or you may be withdrawn from the course.

You are encouraged to join NCTM.

The University of Georgia's honesty code applies to this course. Please see: [http://www.uga.edu/honesty/ahpd/culture\\_honesty.htm](http://www.uga.edu/honesty/ahpd/culture_honesty.htm)