EMAT 3400: Mathematics Methods for Early Childhood Education
Spring 2006
Pre-K

Instructor:	Dr. Dorothy Y. White
Office:	110E Aderhold Hall
	Hours: M &W: 11:00 am - 12:00 pm or by appointment
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Class Time:	Aderhold Room 112 Monday 12:20 – 2:15; Wednesday 12:20 – 1:10
Textbook:	Reyes, R. E., Lindquist M. M., Lambdin, D. V., Smith, N. L. & Suydam, M. N., (2004). Helping Children Learn Mathematics, Seventh Edition. Boston: Allyn and Bacon.

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COURSE OBJECTIVES:

This course is designed to:

1. Help you become aware of children's mathematical thinking, how it differs from adult thinking, and how it might impact your teaching.

2. Expose you to the content, methods, and materials appropriate for preK-5 mathematics instruction. Become familiar with the *Principles and Standards for School Mathematics* (PSSM) and the ideas espoused by the National Council of Teachers of Mathematics (NCTM)

3. Help you become aware of students' and teachers' responsibilities in the mathematics classroom and how this affects planning for and teaching mathematics.

4. Expose you to technology that is appropriate for use in a preK-5 classroom.

5. Cause you to examine your beliefs about the goals and content of preK mathematics instruction.

6. Provide you with alternative methods of assessment and ways of planning instruction based on assessment.

7. Examine and develop ways to teach diverse student populations, with attention to factors such are race, gender, socioeconomic status, language and ethnicity.

COURSE REQUIREMENTS/PROJECTS

1. **Attendance to all classes.** Attendance will be taken on a daily basis. It is important that you arrive on time (especially when we are at Elementary Schools). Absences and tardiness will affect your final grade in the following manner: **Two unexcused absences will result in your final grade dropping by one letter grade. Two tardies count as one absence.**

2. Active class participation

3. Demonstrate understanding of principles of mathematics instruction and use of manipulative materials through final examination.

4. Write you own mathematics autobiography.

5. Prepare a critique of an article from the journal *Teaching Children Mathematics*.

6. Conduct a focused observation on "Motivating students for learning"

7. Assess a child's mathematical knowledge through informal interviews

8. Prepare a report of your field activities

9. Submit all homework on time.

DESCRIPTION OF ASSIGNMENTS:

Mathematics Autobiography

Each student is required to write his or her own mathematics autobiography. What has been your experience thus far with math? What types of teaching and learning worked best for you? Worst? How do you think this has had an impact on you? What are your hopes and fears for this process of transforming yourself into a mathematics teacher? Math Autobiographies must be typed, edited, and submitted **Wednesday, January 11, 2006**.

Article critique/summary:

Each student is required to summarize and critique an article from *Teaching Children Mathematics*. This journal is found in the Mathematics Education or Science Libraries. Critiques be typed, edited, and submitted **Wednesday, February 22, 2006**.

In-school Field Assignments

Each student is required to conduct a focused observation, assess a child's mathematical knowledge and provide a summary of your activities in the field. Detailed guidelines for each assignment along with the due dates are found are attached.

Honor Code and Academic Honesty Policy
All academic work must meet the standards contained in "A Culture of Honesty." Students are responsible for informing themselves about those standards before performing any academic work.

The link to more detailed information about academic honesty can be found at: http://www.uga.edu/ovpi/honesty/acadhon.htm

GRADING:

Mathematics autobiography	5
Article critique	10
Focused observation	15
Student Assessment	20
Summary of Field Activities	15
Final examination	35
TOTAL:	**100**

FINAL GRADES:

A = 90 - 100

B = 80 - 89

C = 70 - 79

D = 65 - 69

F = 0 – 64

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Dorothy Y. White
Field Assignments

Assignments	Due Date	The student will:	The teacher will be asked to:
EMAT 3400 #1: Focused Observation: Motivating Students for Learning	2/8/06	Observe at least 2 mathematics lessons to examine how students are motivated to learn. Students will also answer question given by instructor	Allow students to observe at least 2 mathematics lessons.
EMAT 3400 #2: Student Assessment: Examining student's mathematical conceptual and procedural knowledge	3/22/06	Consult with your cooperating teacher to identify a child that you can assess and a mathematical topic you should explore. Interview child and answer questions specified by instructor	Help the student identify a child she can interview. Allow time for the interview.
EMAT 3400 #3: Involvement in the teaching of mathematics	4/5/06	Suggested activities include: assist individual students with seatwork; work one-on with a child who needs extra help or an extra challenge; work with a small group; run a math center; direct calendar time; teach a whole-class lesson; other instructional activities agreed upon by you and your teacher.	Negotiate with student how she can become involved in the mathematics lessons every week.

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FOCUSED OBSERVATION: Motivating Students for Learning

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The purpose of this assignment is to examine how students are motivated to learn mathematics. Begin by observing your cooperating teacher during at least two mathematics lessons. Once the observations are completed, answer the following questions:

1) Describe the types of assignments and activities that students are involved in that serve to engage and motivate them. How well do these activities/assignments work in motivating students? Explain. Is there a particular activity that is highly motivating?

2) How does the teacher use grouping, instructional materials, and resources to engage and motive students? Explain not only the type of grouping, instructional materials, and resources present, but how effectively does the teacher use them to motivate the students and engage them in learning.

3) What recommendations do you have to help develop and/or extend the student's knowledge of the mathematical topic?

Assignments should be edited, typed and submitted no later than **Wednesday, February 8, 2006**. Late papers will not be accepted.

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STUDENT ASSESSMENT

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The purpose of this assignment is to examine a student's mathematical conceptual and procedural knowledge. Consult with your cooperating teacher to identify a child that you can assess and a mathematical topic you should explore. The topic should be one that the class has worked on in previous lessons. Once the student and topic have been selected, individually interview the student to answer the following questions:

1) What does the student know relative to the selected mathematical topic? Describe the student's conceptual and procedural mathematical knowledge. Be specific as to the assignment and activities you used to assess the student. Special attention should also be given to the type of questions you asked and why, and the student's responses.

2) What did you learn about the student's mathematical knowledge that you may not have learned from only a paper and pencil assessment? Reflect on the interview and describe what you learned.

3) What recommendations do you have to help develop and/or extend the student's knowledge of the mathematical topic?

The documentation of the assignment should include the student's pseudonym, school, grade level, and age. Assignments must be typed and submitted no later than **Wednesday, March 22, 2006**. Late papers will not be accepted.

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MENU OF FIELD ACTIVITIES

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During your weeks in the field, you should avail yourself of every opportunity to become involved in the teaching and learning of mathematics. It is your responsibility to negotiate with your cooperating teacher how you can become involved in the mathematics lesson. This involvement may take a variety of forms:

- assist individual students during seatwork
- work one-on-one with a child who needs extra help or an extra challenge
- work with a small group
- run a math center (one the teacher has developed or one that you can develop)
- direct calendar time
- teach a whole class lesson
- other instructional activities agreed upon by you and your teacher

Please note that the above ideas are only suggestions and should be adapted to your individual situation and other field requirement. Do not hesitate to contact me for lesson ideas, suggestions, or to borrow concrete materials. A brief report of two of your activities in the field should be typed and submitted by **Wednesday, April 5, 2006**. Late papers will not be accepted.

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Guidelines for ARTICLE CRITIQUE

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Teaching Children Mathematics, is an official journal of the National Council of Teachers of Mathematics (NCTM) written for teachers of mathematics from prekindergarten to grade 5. It presents new developments in curriculum, instruction, learning, and teacher education; interprets the results for research; and in general provides information on the broad spectrum of mathematics education appropriate for preservice and inservice teachers.

This assignment requires that you critique a recent article (1996 - 2001) from *Teaching Children Mathematics*. Choose an article related to the *teaching* of elementary school mathematics or one related to *diagnosing* student learning. (One issue, volume 7, number 9, May 2001 has an article on "Mouse maze tournament: Connecting geometry and measurement"). The journals can be found in the Science Library, Boyd Hall.

Your critique is due **WEDNESDAY, FEBRUARY 22, 2006**. In writing your critique, use the following format:

A. **Author and title of article**. This information should follow APA format and form the heading of your first page, e.g.:

Curtis, S. (2001). Mouse maze tournament: Connecting geometry and measurement. *Teaching Children Mathematics*, *7*, 504- 509.

B. **Purpose of the article**. (Why did the author write the article?)

C. **Summary of the article**. (In your own words, what did the author really say?)

D. **Critique**. (Critically evaluate the article from the point of view of an elementary school teacher. Is the information potentially useful or not, etc.?)

Your critique should range in length from 1 - 3 pages. All papers must be typed and edited before submission. Please **attach a copy of the article** to your critique. Late papers will not be accepted.

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TENTATIVE COURSE OUTLINE

Monday	Wednesday
January 9, 2006 Overview of Course. New Goals for Teaching Mathematics	**January 11, 2006** Chapter 1: Teaching Math Today ***Math Autobiography Due***
January 16, 2006 ***MLK Holiday – No Class***	**January 18, 2006** Chapter 2: Teaching for Understanding
January 23, 2006 Chapter 2: Teaching for Understanding Chapter 3: Creating the Class Environment	**January 25, 2006** Chapter 3: Planning for Instruction
January 30, 2006 Chapter 4: Assessment	**February 1, 2006** Chapter 4: Assessment
February 6, 2006 Chapter 5: The NCTM Process Standards & Problem Solving	**February 8, 2006** Chapter 5: More on Problem Solving ***Focused Observation Due***
February 13, 2006 Chapter 6: Beginning Number Sense (Pre-Number Concepts)	**February 15, 2006** Chapter 6: Pre-Number Concepts
February 20, 2006 Chapter 6: Counting	**February 22, 2006** Chapter 6: Counting ***Article Critique Due***
February 27, 2006 Math and Children's Literature	**March 1, 2006** Chapter 7: The Big Ideas of Place Value
March 6, 2006 Chapter 7: Place Value	**March 8, 2006** Chapter 8: Extending Number Sense
March 13, 2006 - March 15, 2006 ***SPRING BREAK***	
March 20, 2006 Chapter 9: Operation Sense +/-	**March 22, 2006** Chapter 9: Operation Sense +/- ***Student Assessment Due***
March 27, 2006 Chapter 9: Operation Sense x/÷	**March 29, 2006** Chapter 9: Operation Sense x/÷
April 3, 2006 Chapter 9: The Basic Facts	**April 5, 2006** Chapter 9: The Basic Facts ***Menu of Field Activities Due***
April 10, 2006 Chapter 10: Computational Tools	**April 12, 2006** Chapter 10: Estimation
April 17, 2006 Chapter 11: Computational Algorithms	**April 19, 2006** Chapter 11: Multicultural Algorithms
April 24, 2006: Putting it All Together	**April 26, 2006:** Catch-up Day
May 1, 2006: Final Exam Review	

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.