

Bulletin Description

Mathematics teaching and curriculum in preK through 5th grade. Content and materials appropriate for preK through 5th grade mathematics curriculum is integrated with an analysis of mathematics teaching, including the use of technology. Includes a field component.

EMAT in EDEC Program Overview

Your preparation for teaching elementary school mathematics includes two EMAT courses. In this second course, we will focus on the child's mathematical development related to **geometry, measurement, early algebra, statistics and probability**. We will examine teaching strategies that reflect appropriate theory and practice from mathematics, developmental psychology, and pedagogy. The fundamental guiding perspectives will emphasize how children can construct knowledge for quantitative reasoning that provides a solid preparation for success in algebra and beyond. Both the NCTM *Principles and Standards for School Mathematics* and the Georgia Performance Standards will serve as the guiding curricular frameworks. You will complete extensive classroom-based experiences in which you will develop, conduct, and report on a variety of mathematical instructional activities with children.

Goals & Objectives

1. To deepen your understanding of how and why we can teach in ways that allow our students to experience the power, beauty, and usefulness of mathematics.
2. To provide you experiences in investigating problematic situations in which mathematics can be used to interpret, analyze, conclude or predict, generalize, and understand more deeply the problem being investigated.
3. To learn about resources and tools that can be used by to support applied problem solving and investigations of mathematical ideas by our students.
4. To develop ideas and beliefs about teaching methods that support classroom activities where our students are actively investigating and using mathematics.
5. To collect and develop problematic situations and related materials that we can take into our mathematics classrooms.

Starting Premises & Assumptions

1. We need to reform school mathematics to emphasize greater understanding by our students of their mathematics and its usefulness--"...but, why do I have to learn this?"
2. Young mathematics students can engage in deeper thinking and reasoning than is typically expected or allowed, if they are motivated and supported to do so--"Wow, I got it!"
3. If approached effectively, applied "real world" situations where mathematics is used will be more appealing and interesting to students--"Where in the world will I ever use this?"
4. Students need to be actively involved in "doing" significant mathematics----a Chinese proverb: "I hear and I forget, I see and I remember, I do and I understand."

5. Being generative is the essence of being knowledgeable, and we must help our student to learn to be more self-regulative & generative--*Piaget: "To invent and discover is to understand."*
6. Cooperative mathematical activity in various groupings can facilitate student investigations and problem solving----*"I can learn from others, too, if I listen and watch and share."*
7. A teacher's expectations, made clear to students, can greatly affect student effort and productivity----*"If we want more, we have to expect more--of ourselves and each other."*
8. Interpersonal relationships among students and teacher are a critical aspect of "life in classrooms," and teachers must be alert to personality and relationship factors----*"Am I relating in positive ways, are my relationships healthy & balanced, & am I fostering these among students?"*
9. Modern technology tools must be accepted and used routinely in the mathematics classroom to further goals and activities where students actively explore and investigate their mathematics----*"What if...?"*
10. Modern school mathematics must include varied experiences with data (statistics), chance (probability), quantitative reasoning (numbers & operations), patterns (sequences), scales, rates and comparisons (ratio & proportion), change (variables & expressions), growth & decay (functions), size & location (geometry & measurement)---*"Mathematics is a rich tapestry of ideas and processes, a playground of abstraction and generality."*
11. Factors related to cognitive and emotional development of students suggest structured play and "hands-on" explorations are essential foundations to abstracting and generalizing for building personal and shared theories of mathematics---*"The art of teaching is in the act of discovery" (Polya).*

Learning & Teaching Activities

The activities in our course are chosen to support your attainment of the course goals and objectives.

General Expectations

1. As you continue in this teacher education program, the Mathematics Education faculty considers you to be a novice teacher. You have made a commitment to, and have now entered, the education profession. As such, you should conduct yourself at all times in a professional manner.
2. Attendance and punctuality are required, since much of the value of the course will be through the experiences that occur during our class sessions. You must be present to learn, and to contribute to the learning of others. If you must be absent, please try to notify me in advance. If that is not possible, please send an email or talk with me as you can. As per UGA policies, more than four (4) unexcused absences can result in being administratively withdrawn from the course. All of this is especially critical during school-based sessions with mentor teachers and children.
3. Active participation is expected, a critical assumption for learning anything more deeply. The pedagogy being advocated and modeled through our course is the belief that our students must commit to, and be involved actively in, the problems and situations being posed. Be involved. Developing collegial, supportive relationships is an important aspect of the teaching profession.
4. Thorough preparation for each class session is expected. The better-prepared one is for any experience, the more one will likely benefit from it. In particular, try to complete assigned readings and other activities before we will discuss them in class.

5. Thoughtful reflection following each course experience is expected. “Looking back” at one’s experiences can help to review and consolidate what is important to remember. Being reflective can help to sort out the “slag” or discards and find the “gems” to keep. At times, it can help one to evaluate ideas and feelings, and make needed changes. In general, a reflective person makes better choices and decisions.
6. Deadlines are goals, which can be altered, as we may need to do so. Flexibility is needed when dealing with humans, who differ in their needs in unique ways. If you need additional time that is reasonable and justified, please talk with me about it.
7. High quality is expected at all times. All participants should be expected to contribute and produce in very high quality ways, striving always to do the very best. This must be especially true of those who would choose to be a teacher of others!
7. Find enjoyment while you are growing as a teacher. Find positive energy in our course. If you have any, try to deal with your anxieties, fears, or negative feelings about mathematics. Strive to reach a new state of awareness, confidence, and peace, as you achieve one more step to become an outstanding school mathematics teacher!

Specific Productions & Assignments

1. A “journal of reflections”----

The purpose for engaging in reflective activity is to promote deeper, professional thinking. Research shows that one characteristic of the most effective teachers is that they are reflective practitioners---they intentionally and routinely think back over what they’ve done, in order to learn from it and to set the stage for improving their own teaching.

Therefore, following each campus class session from January 8 through April 30, you should write a “diary” or journal entry (1/2 to 1 single-spaced typed page) to express your thoughts about your experiences (be sure to note the date with each entry; don’t start each on a new page). Some suggestions to guide you---

- By thoughtful. Think back to recall what you experienced.
- Do not write a “chronology of events” (i.e., what did we/you do).
- Rather, what were you thinking or feeling? What did you like or dislike?
- What were your reactions? Agree, or disagree, with?
- About what might you be unclear, confused, or have questions?

Your chronologically collected journal reflections will be submitted as follows:

Jan 8-Feb 19	on Feb 21
Feb 21-Mar 28	on Apr 2 (in your Field Report)
Apr 2-Apr30	in course portfolio (due May 2)

2. A “readings notebook”----

Selected reprints from professional references will be distributed in class. **For those specifically designated**, prepare a “readings notebook” entry. This should include the bibliographic citation, a brief summary of the major ideas or points from the reading, and a brief reaction or interpretation that reflects your thinking. For some items, you will be given additional specific directions for preparing your reactions. All “readings notebook” entries should be prepared neatly, using a word processor to be printed for placement in your course portfolio.

3. **Mathematical activities----**
Specific mathematical situations will be posed---all appropriate for use with elementary children (at some developmental stage). When directed, you will develop a “write up.” In the case of GSP or Excel productions, submit a sample printout (include name, date). Prepare a neatly presented record of your productions to be included in your course portfolio.
4. **Teaching unit----**
During your elementary school experiences, you will plan, conduct, and report on a series of at least three lessons to be done with children. Of course, this will need to be conceptualized and developed in collaboration with the classroom teacher/mentor, and is therefore subject to that person’s consent and approval. Specific detailed guidelines for completing this important course requirement will be provided and discussed.
5. **Field report----**
This report will encompass many aspects of your school-based activities and experiences, all dealing with your growth as a teacher of elementary mathematics. In addition to your “teaching unit,” you will be expected to engage in other aspects of mathematics in your school. You will complete a reflection and analysis of your experiences following each day in your school. Specific detailed tasks, as well as guidelines for completing and reporting on them, will be provided and discussed.
6. **Final examination----**
If given, the final examination will be a “take home” (open book) independent activity. It would be due by **noon, Friday, May 4th**.
7. **Course Portfolio----**
Your course portfolio will be comprised of all of your productions this term. You will want to submit a neat, thorough, well-written, carefully organized portfolio. Through it, you can demonstrate your effort, attitude, growth, and achievement. [Portfolio items submitted during the term will be placed in your notebook to be returned to you.] It will be due by **noon, Wednesday, May 2nd**.

Assessment & Evaluation

1. Assessment will be a shared, on-going activity. We will assess in a variety of contexts and ways. You will be self-assessing as you work on assigned tasks and determine your need for help or guidance, and as you engage in reflective analysis and journal writing. The major purpose of on-going assessment is to help you learn and grow, and to help us work with you more effectively.
2. Throughout the course, various assignments will be submitted (at the start of class) on specified due dates. “Late” submissions will be assessed a penalty---1 day late: 10%; 2 days late: 30%; after 2 days: 50%.
3. Your course portfolio will be assessed at the end of the term (due May 2nd). The following items should be included (in clearly marked sections) in your end-of-term portfolio (with **400 possible points** as noted below):

Journal of reflections (campus sessions)	(25 pts.)
Readings notebook	(15 pts.)
Mathematical activities	(10 pts.)
Teaching unit	(200 pts.)
Field report	(150 pts.)

Your portfolio will be returned. When I've completed grading, I will notify everyone by email that it can be picked up. If needed, I will keep it for pickup until June 1st.

4. The final examination (if given) will involve **100 possible points** ("extra credit" 10 pts.).
5. Course grades will be based on total points earned (out of **500 (or 400) possible points**), using a 90-80-70-60% scale to assign final letter grades.
6. All participants must complete a course evaluation to be provided by the instructor, which will include a self-evaluation section.

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