

Augusta State University
College of Education
Department of Teacher Education
Fall 2009

Course: ECED 4322 A & B: Early Childhood Mathematics Education
Time: TR: 8:30 – 9:45(A); 10 – 11:15(B); UH 355
Instructor: Dr. Emam Hoosain: **Office:** University Hall: 369
Telephone: 667- 4507 (W); 447- 8063 (H); **Email:** ehoosain@aug.edu
Office Hours: TR: 11:15 – 12:00; 1 – 4; and by appointment.

Required Texts

Van de Walle, John A. (2010). *Elementary and Middle School Mathematics: Teaching Developmentally* (7th ed.). NY: Pearson Education, Inc.

Hoosain, E. (2003). *A Concrete, Problem-Solving Approach to Teaching Operations on Fractions Using Discrete, Manipulative Materials*. Tempe, AZ: Scholargy, Inc.

***Livertext membership

Recommended Texts:

Cathcart, W. G., Pothier, Y. M., Vance, J. H. & Bezuk, N. S. (2003). *Learning Mathematics in Elementary and Middle Schools* (3rd ed.). NJ: Merrill Prentice Hall.

Kennedy, L. M. & Tipps, S. (1999). *Guiding Children's Learning of Mathematics* (9th ed.). Belmont, CA: Wadsworth Publishing Company

Musser, G. L. & Burger, W. F. (1994). *Mathematics for Elementary Teachers: A Contemporary Approach* (3rd ed.). NY: Macmillan College Publishing Company.

Reys, R. E., Lindquist, M. M., Lambdin, D. V., Smith, N. L. & Suydam, M. N. (2003). *Helping Children Learn Mathematics* (6th ed.). NY: John Wiley & Sons, Inc.

Sheffield, L. J. & Cruikshank, D. E. (2000). *Teaching and Learning Elementary and Middle School Mathematics* (4th ed.). NY: John Wiley & Sons, Inc.

Troutman, A. P. & Lichtenberg, B. K. (1995). *Mathematics: A Good Beginning* (5th ed.). CA: Brooks/Cole Publishing Company.

Pertinent Publications:

National Council of Teachers of Mathematics. (2000). *Principles and Standards for School Mathematics*. Reston, VA: NCTM.

Teaching Children Mathematics, a Journal published by NCTM.

Supplementary Readings will be assigned from time to time.

Syllabus

Catalog Description:

The course focuses on a conceptual approach to mathematics that enables students to acquire clear and stable concepts by constructing meanings and abstracting concepts from physical situations and empirical experiences. The students will be expected to integrate their knowledge of mathematics, learning, pedagogy, students, and assessment, and apply that integrated knowledge to teaching mathematics in grades Pre-K through 5.

Prerequisites: Admission to ECED program; successful completion of Block I and II courses.

Conceptual Framework Principles Addressed:

Element: Prepared

Dispositions: Critical thinkers about the process of teaching, learning, and assessment.

1. Understand how students learn and develop and be able to provide developmentally appropriate learning opportunities that support their intellectual, social and personal development. (CFP 2)

Element: Able

Dispositions: Empathetic, responsive, enthusiastic, inclusive, and reflective in relations with students, parents, and peers.

1. Understand and use a variety of instructional strategies to encourage the learner's development of critical and creative thinking, problem-solving and performance skills. (CFP 4)
2. Plan instruction based on knowledge of subject matter, the learners, the community and curriculum goals. (CFP 7)

Element: Responsive

Dispositions: Creative, challenging, and flexible in teaching/professional practices.

1. Understand how students differ in their approaches to learning and be able to create instructional opportunities that are adapted to diverse learners. (CFP 3)
2. Be a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and actively seeks the opportunity to grow professionally. (CFP 9)

Course Goal:

To provide a framework of:

- (a) research-based pedagogical methods;
- (b) knowledge of curriculum, instruction, and assessment issues in mathematics education, and
- (c) practical experience, that will enable the students to (i) develop confidence in their ability to manage the instructional process; and (ii) formulate a plan for their continued professional development.

Specific Objectives:

The students will:

- (a) demonstrate a knowledge of NCTM's *Principles and Standards* and the Georgia Performance Standards (GPS);
- (b) plan learning experiences;
- (c) define learning goals for daily and unit plans;
- (d) develop daily and unit plans (unpack a standard);
- (e) develop strategies to teach mathematical concepts through hands-on and other experiences;
- (f) learn how to manage student behavior;

- (g) learn how to assess student achievement; and
- (h) gain practical experience by observing classrooms.

Course Outline:

Tentative Schedule

- Week 1: Big Ideas in the Teaching of Mathematics (Ch. 2, 3, 4, 5, 6, 7)
- Week 2: NCTM’s *Principles and Standards for School Mathematics* and the GPS (Ch. 1)
- Week 3: Inductive and Deductive Reasoning and Multiple Representations
- Week 4: Pre-Number Concepts (Matching, 1 – 1 Correspondence, Sorting, Sequences and Patterns) (Ch. 8, 14)
- Week 5: Understanding Numbers and Number Concepts (Ch. 8, 10, 11, 13)
- Week 6: Addition and Subtraction of Whole Numbers (Ch. 9, 10, 12)
- Week 7: Multiplication and Division of Whole Numbers (Ch. 9, 10, 12)
- Week 8: Informal Geometry, Spatial Sense, Measurement, and Fractions (Ch. 15, 16, 17)
- Week 9: Data Analysis & Probability, Assessing Student Achievement (Ch. 5, 19, 20, 21, 22)
- Week 10: Problem Solving and Cognitively Guided Instruction (CGI). (Ch. 3, 4)

Laboratory Experience: 09/21 – 09/25; 10/19 – 11/13.

Thanksgiving Holiday: 11/25 – 11/27

Evaluation

Course Grading Procedure:

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| 1. Pedagogical Knowledge | 100 pts. |
| Class Participation and Attendance | 20 pts. |
| Examinations (Mid-Term [10/08] and Final [12/10, 7 - 9(A); 12/10, 10 - 12(B); 12/11. Leave 12/08, 10 – 12 free so that all the exams can be scheduled for that time. | 80 pts. |
| Exams will be based on what transpired in class and assigned readings. | |
| 2. Pedagogical Application | 30 points |
| Unpacking a Standard (TBA) (CFP 7) | 15 pts. |
| Planning Learning Activities (Ongoing) [Inductive & Deductive Reasoning (CFP 4); Multiple Representation (CFP 2) | 15 pts. |
| 3. Laboratory Experience Report (11/20) (CFP 4) | 100 points |
| Please refer to the attached guidelines which should be followed to the letter. The focus is on the teaching of mathematics mathematics. | |
| 4. Journal (Typed [1 – 2 pgs.] & submitted 9/1, 15, 10/1; 10/15.) (CFP 9) | 20 points |
| The Journal can be descriptive, reflective and critical and may contain summaries of class proceedings and readings, what you are or not learning, what you will like to learn, applicability of what you are learning to the classroom, etc. A grade will be awarded for each Journal. Feedback will be given on each Journal. Livertext should be used to create and submit these Journals. | |
| 5. Impromptu Assignments (e.g., Critique a math website.) | 15 pts. |

More detailed directions about assignments will be given in class, if necessary. You are advised to meet with the Instructor individually if you are not sure of what is required.

Note: All dates are tentative. A passing grade (at least a C) for the Lab Experience must be obtained in order to pass the course.

Note: Students are required to attend classes regularly and punctually. If a student is absent for more than **two** times, he/she may be asked to withdraw from the class. Unsatisfactory attendance of classes and participation in class activities will adversely affect your grade. It is the student's responsibility to complete (if permitted by the Instructor) any task assigned during his/her absence. **Points will be deducted for late submission of assignments – 10% for every day it is late.** Points will be deducted for grammatical and other errors in written assignments. All assignments should be typed double-spaced. You are advised to complete the readings and assignments, meet regularly with other students to discuss issues, and see the Instructor if you have any problems. Examinations could be in-class, take-home, or both. Requests to do make-up examinations, take an exam before the scheduled time, etc. should be made (in writing) only in cases of absolute necessity. The Instructor will make a final decision about this. Please refrain from bringing any form of food or drink (except in your stomach) to the classroom. If you do, there should be no eating or drinking in class (except with the Instructor's permission); and turn off your cell phones, please. Children and other relations are not allowed in class. Occasionally, the Instructor may communicate with you via your Pipeline email address; you are advised to read your campus email regularly. Unless otherwise agreed upon, assignments should not be submitted as email attachments. Students with disabilities need to contact ASU's Office of Disability at (706) 737-1469 to discuss appropriate accommodations. Students are strongly advised to read the section on "Academic Honesty" in the University Catalog. Final Grading will be as follows:

- A: 90⁺ - 100**
- B: 80⁺ - 90**
- C: 70⁺ - 80**
- D: 60⁺ - 70**
- F: 00 - 60**