

**Auburn University Course Syllabus
Fall 2010**

Course Number: CTEC 3020-001
Course Title: Primary Math and Science
Course Time and Place: M 4:30 pm – 7:20 pm (2414 Haley Center)
Credit Hours: 3 semester hours
Prerequisites: Admission to Early Childhood Teacher Education
Co-requisites: None

Instructor: Denise Dark, NBCT
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Office Hours: By Appointment
Required Text:

Charlesworth, R., & Lind, K. (2010). *Math and Science for Young Children* (Sixth ed.). Belmont, CA: Wadsworth/Cengage learning.

Kamii, Constance (2000) *Young Children Reinvent Arithmetic* (Second ed.). New York, NY: Teachers College Press

COURSE DESCRIPTION

This course is to provide pre-service teachers opportunities to be more knowledgeable and practical in early childhood (Pre-K, K-3rd grade) curriculum and instruction in the areas of mathematics and science. Pre-service teachers will have a better understanding of children's learning and development, curriculum development, and instructional methods. Based on their understanding of early learning standards as well as aforementioned areas, pre-service teachers will apply their knowledge to designing, implementing, and evaluating the interdisciplinary curriculum. In addition, through hands-on activities and teaching demonstrations, they will also develop effective teaching strategies working with young children that can be used in their future classrooms.

COURSE OBJECTIVES

Upon completion of the course, students will be able to:

1. Identify important mathematics /science content, process skills, and attitudes appropriate to young children. (NAEYC Standard 1b, 4a, 4b, 4c, & 4d)
2. Become acquainted with the principles and elements of curriculum development (e.g., goal setting, planning, implementing, and assessing curriculum) in mathematics and science. (NAEYC Standard 1a, 1b, 1c, 4b, 4c & 4d)
3. Develop an understanding that early childhood curriculum is an integrated curriculum, and that children's learning in mathematics and science takes place in integrated learning experiences with concrete materials in a variety of contexts. (NAEYC Standard 4c)

4. Acknowledge the unique needs (e.g., physical, social, intellectual, linguistic, and cultural) of all children and the need to work with their families. (NAEYC Standards 1a, 1b, 1c, 3b, 3c, 3d, 4b, 4d, 5b, 5c, & 5e)
5. Design, implement, and evaluate developmentally appropriate curricular content, strategies, and instructional materials, and reflect on their performance. (NAEYC Standards 1a, 1b, 1c, 4b, 4c, & 4d)
6. Understand how to record, report, and evaluate development level of young children through naturalistic/performance-based assessment and utilize developmentally appropriate assessment and reporting techniques. (NAEYC Standards 3a, 3b, & 3c)

USEFUL WEBSITES

National Association for the Education of Young Children: <http://www.naeyc.org>

National Council of Teachers of Mathematics (NCTM): <http://www.nctm.org>

National Science Teachers Association (NSTA): <http://www.nsta.org>

Council for Exceptional Children (The Division for Early Childhood): <http://www.cec.sped.org>

Alabama Math, Science, and Technology Initiative: <http://www.amsti.org>

Montessori Program: <http://www.montessori.org>

High Scope Program: <http://www.highscope.org>

Bank Street Approach: <http://www.bnkst.edu>

Project Approach: <http://www.projectapproach.org> or <http://illinoispi.org>

Waldorf approach: <http://www.awsna.org>

Reggio Emilia Approach: <http://www.reggioemiliaapproach.net>

AUBURN COLLEGE OF EDUCATION-CONCEPTUAL FRAMEWORK

Competent

Competent professionals demonstrate the knowledge and skills needed to facilitate the learning of the individuals they serve. Their competence enables them to model and promote active, collaborative, and ongoing learning. Their efforts are enhanced by their abilities to foster learning communities that are safe, stimulating, and enriched with diversity; engage in reasoned and purposeful decision making; and implement their professional practices in proactive, flexible, and self-regulating ways.

We recognize that the development of professional competence is linked to levels of preparation and experience. We also acknowledge that competence continues to develop over the course of an entire career.

Committed

Work on Science Notebook

Committed professionals make reasoned decisions based on thoughtfully constructed values. As a College, we strive to nurture values that support the learning of all people, honor diversity, protect the integrity of learning, and expand the scholarship of our professions. We view these values as professional dispositions, and we define them as filters for responsible decision making. Our College emphasizes the conscious development of commitments related to professional responsibilities and ethics, collaboration, diversity, and intellectual vitality.

Reflective

We choose to frame reflection as a critical and pervasive habit of mind that permeates and fuels the ongoing expansion of competence and the continued development of reasoned commitments. Reflective professionals subject their own competencies and commitments to continuous scrutiny as they systematically monitor the impact of their professional practices on the individuals they serve and make adjustments as needed. Thoughtful reflection emphasizes reviewing and analyzing past practices in ways that influence and improve future practices. This stance inspires self-initiated professional growth and results in increased capacities for addressing the complexities and dilemmas situated within the work of educational and human services professionals.

EVALUATION PROCEDURES

Student achievement of course goals and objectives will be evaluated through the following:

- ☐ Participation in class activities
- ☐ Developed lesson plans and integrated unit plan (with considerations for student diversity)
- ☐ Demonstration of teaching (with adaptations for students' diverse needs)
- ☐ Completion of assignments and exam/quizzes

COURSE REQUIREMENTS

1. Software Critique (15 points): Carefully designed classroom environment including educational software can function as an effective teaching and learning tool (NAEYC Standard 1b) if properly designed and used. Teacher candidates should be able to select developmentally appropriate software and use it effectively (NAEYC Standard 4b).

The best way to evaluate software is to observe students using it. Observing students, however, does not tell you everything about the software. Even some games and tutorials can work better with an appropriate plan from the teacher. If students are simply thrown in front of the software, they might not learn as much as they would if the software was used as part of an integrated lesson. Therefore, it is important to not only think about the software itself, but how the software will be used. The critique format will be provided in class. All questions should be answered and a numerical score computed.

2. Family Involvement Project (15 points): Describe an activity (to reinforce a math/science concept) which would be done at home by individual students (Pre-K, K-3rd grade) and their families (e.g., birthdates of everyone in the family – aunt, uncle, cousins – to see which month is most common). Be creative in involving the family. Prepare a packet (e.g., an instruction to students, a letter to families with instruction) to be sent home (NAEYC Standards 2c & 4a). It will be demonstrated in class.

3. Science Center Designs (30 points): Design a center that might be set up in a classroom to reinforce one of the science concepts noted in textbook and class (NAEYC Standard 1a & 1b). Implement the various procedures discussed in class (NAEYC Standard 4). The center can be displayed on a table or mounted on a tri-fold, stand-up cardboard sheet. Include center title, directions, materials, and checking or self-checking procedures. The center should be based on the science concept chosen. Part of the center design is to include the following: A lesson (of your choice but developmentally appropriate for grades (Pre-K, K-3rd

grade) that can be taught to your peers in class and then, with necessary modifications, to two small groups at the practicum site in the near future.

4. Single Lesson Plan Reflecting the Integration of Literacy, Science, and Math (30 Points): Develop a lesson plan for science that includes a children's book to engage and a math activity to extend the lesson. Use the Five E Model for Inquiry Based Learning which will be modeled in class: Engage, Explore, Explain, Extend, Evaluate. (NAEYC Standard 4).

5. Integrated Unit Plan & Teaching Demonstration (40 points): Teacher candidates should be able to integrate their understanding of developmentally effective approaches to teaching and learning; and their knowledge of academic disciplines, to design, implement, and evaluate experiences that promote positive development and learning for all young children (NAEYC Standard 4).

Teacher candidates will be required to design a thematic unit plan with 6 lesson plans (3 math and 3 science) utilizing learning standards, technology, manipulatives, and provide adaptations for students with special needs including those of cultural and linguistic diversity. Each group of 3 students will demonstrate teaching the integrated unit using lesson plans and instructional materials they designed. Lesson plans should have the following:

1. Goals and Objectives (NAEYC Standard 1a)
2. Grade level and Time (NAEYC Standard 1a)
3. Learning Context (NAEYC Standard 1b)
4. Standards from the CORE curriculum (NAEYC Standard 4c)
5. Detailed procedures (NAEYC Standard 4b & 4c)
6. Differentiated Instruction (NAEYC Standard 1c)
7. Rubrics or assessment procedures (NAEYC Standard 4d)

6. Class Participation and Professional Behavior (10 points): All students are required to be active participants in class discussions and activities. Attend all classes and be punctual. The participation points will be earned by in-class, active engagement in all activities (including discussions and presentations). Students are also expected to be respectful to others and do not display disruptive or inappropriate behavior during class. At each class session, participation points will be earned through active discussion and other group activities. Participation points will be assessed at the end of each class and cannot be made up.

7. Quizzes (20 points each) Each quiz will be a writing assignment to be completed on college ruled notebook paper in class.

GRADES

Requirements and Points	Grades
<input type="checkbox"/> Software Critique (15 points) <input type="checkbox"/> Family Involvement Project (15 points) <input type="checkbox"/> Science Center Designs (30 points) <input type="checkbox"/> Integrated Single Lesson Plan (30 points) <input type="checkbox"/> Integrated Unit Plan and Teaching (40 points) <input type="checkbox"/> Class Participation and Professional Behavior (10 points) <input type="checkbox"/> Quizzes (20 points each, 60 points total) Total: 200 points	A = 181-200 points B = 161-180 points C = 141-160 points D = 121-140 points F = 0-120 points

CLASS POLICY STATEMENTS

Participation: Students are expected to participate in all class discussions and participate in all exercises. It is the student's responsibility to contact the instructor if assignment deadlines are not met. Students are responsible for initiating arrangements for missed work.

Attendance/Absences: Attendance is required at each class meeting. If a quiz is missed, a make-up quiz will be given only for University-approved excuses as outlined in the Tiger Cub. Arrangement to take the make-up quiz must be made in advance. Students who miss a quiz because of illness need a doctor's statement for verification of sickness and should clear the absence with the instructor the day they return to class. Other unavoidable absences from campus must be documented and cleared with the instructor in advance. **Two unexcused absences will result in a full letter grade deduction from the final letter grade. Two times of tardiness will convert into an unexcused absence.** Three unexcused absences could result in a teacher candidate being dropped from the program.

Accommodations: Students who need special accommodations in class, as provided for by the American Disabilities Act, should arrange a confidential meeting with the instructor during office hours the first week of classes - or as soon as possible if accommodations are needed immediately. You must bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have these forms but need accommodations, make an appointment with the Program for Students with Disabilities, 1244 Haley Center, 844-2096.

Honesty Code: The University Academic Honesty Code and the Tiger Cub Rules and Regulations pertaining to Cheating will apply to this class.

Professionalism: As faculty, staff, and students interact in professional settings, we are expected to demonstrate professional behaviors as defined in the College's conceptual framework. These professional commitments or dispositions are: a) Engage in responsible and ethical professional practices, b) Contribute to collaborative learning communities, c) Demonstrate a commitment to diversity, and d) Model and nurture intellectual vitality.

***Cell Phone Policy:** Cell phone use or text messaging during the class session is viewed as extremely unprofessional and will result in an automatic loss of 5 points of **Class Participation and Professional Behavior grade points** (under COURSE REQUIREMENTS) **for each occurrence.** It is best that cell phones not be visible during the class session to avoid any misunderstanding of their use.

Dates	Topic	Reading/ Assignments (Due)
8/23	Course Introduction Overview of NAEYC <u>Standards</u>	Syllabus
8/30	Overview of <u>NCTM Principals and Standards</u> ; Science as Inquiry; <u>Developmentally</u> <u>Appropriate Practice</u>	NAEYC Standards, NCTM Standards
9/6	Labor Day	
9/13	How Children Learn Model Lesson Reflecting Curriculum Integration	Charlesworth Text: Section 1 Unit 1-2, Kamii Text Chapter 1 Quiz 1 (NAEYC Standards)
9/20	Problem Solving; Assessment	Charlesworth Text: , Section 1, Unit 3-4 Quiz 2 (NCTM Principals and Standards)
9/27	One to One Correspondence; Number Sense and Counting Model Lessons Reflecting Topics	Internet Search - Alabama Courses of Study: Math & Science (Bring printouts for K-Grade 3 to the class) Charlesworth Text: Section 1, Unit 8,9 Quiz 3 (on Three Types of Knowledge and Inquiry Instruction)
10/4	Instructor at State AMSTI Meeting	Charlesworth Text: Section 1, Unit 10,11 Kamii Text: Chapter 2
10/11	Classifying and Comparing Model Lessons Reflecting Topics	Charlesworth Text: Section 1, Unit, 12, 13, 14 Kamii Text: Chapter 3 Lesson Plan Due Reflecting Integration of Literacy, Math, and Science; Software Critique Due
10/18	Role of Social Interaction in Learning Planning for Science Sharing of Lesson Plans	Charlesworth Text: Section 3, Unit 21; Section 6, Unit 34, 35, 36
10/25	Model Lessons from AMSTI Science Science Notebooking Sharing of Lesson Plans	Charlesworth Text: Section 3, Units 17-20 Family Involvement Project Due
11/1	Discussion of Themes that Integrate Curriculum; Brainstorming, Webbing, KWL, etc. Overview of Group Project Expectations Sharing of Family Involvement Projects	Charlesworth Text: Section 3, Unit 22 Additional Reading TBA
11/8	- Operations With Whole Numbers -Sharing of Family Involvement Projects	Charlesworth Text: Section 5, Unit 27 Kamii Text: Chapters 5-6 Science Center Design Due

11/15	- Science Center Design Presentations Time to work in Groups on Integrated Unit Plan	
11/22	Thanksgiving Break	
11/29	-Science Center Design Presentations	
	- Integrated Unit Plan/ Teaching Presentation	
	- Integrated Unit Plan/ Teaching Presentation - Course Evaluation	Integrated Unit Plan Due