**Auburn University Course Syllabus**

**Spring 2011**

**Course Number:** CTEC 3020-001

**Course Title:**  Primary Math and Science

**Course Time: T 4:30 pm – 7:20 pm**

**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

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**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](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](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://illinoispip.org>

Waldorf approach: [http://www.awsna.org](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

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**

Specific criteria in rubric format will be discussed as due date approaches for items 1-5.

**1. Glyph Design (20 points):** Design a glyph to be used for data collection and analysis. The content of the glyph questions must be developmentally appropriate and sensitive to the diversity of a student population.

**2. Science Center Design (25 points):** Design a center that allows for free exploration followed by interaction with focused questioning. Scientific Process skills should be emphasized.

**3. Family Involvement Project (20 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.

**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.

**5. Mathematics Lesson Plan (25 points):** Develop a lesson plan for mathematics reflecting one of the content standards of the NCTM. One or more NCTM process standards must be incorporated as well as a

means for evaluating the lesson.

**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. Exams (35 points each)**

**GRADES**

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| Requirements and Points | Grades |
| □ Glyph Design (20 points)  □ Family Involvement Project (20 points)  □ Science Center Design (25 points)  □ Integrated Single Lesson Plan (30 points)  □ Mathematics Lesson Plan ( 25 points)  □ Class Participation and Professional Behavior(10 points)  □ Two Exams (35 points each)  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 an exam is missed, a make-up exam will be given only for University-approved excuses as outlined in the Tiger Cub. Arrangement to take the make-up exam must be made in advance. Students who miss an exam 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. **Each unexcused absence** will result in 3 points deducted from the class participation grade. **Tardy arrivals** will result in 1 point deducted from the class participation grade. If points from absences and tardy arrivals exceed the 10 points allotted for class participation, the points will be taken from the final total. 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 results 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.

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| **Dates** | **Topic** | **Reading/ Assignments (Due)** |
| 1/11 | Course Introduction; Community Building Activities | Syllabus |
| 1/18 | Overview of NAEYC Standards, NCTM Principles and Standards with Focus on Data Analysis and Probability, Overview of Piaget’s Stages of Development | NAEYC Standards Handout; Charlesworth Text, Unit 1 and 20; Handout on Glyphs |
| 1/25 | Overview of NSTA Standards, Science Process Skills, Types of Scientific Inquiry, | Charlesworth Text, Units 5, 10, 11 and related Handouts |
| 2/01 | Instructor at State Meeting in Tuscaloosa; Guest Speaker to present Project Wild | Kamii Text; Chapter 1; Locate and Print Alabama Course of Study Standards for Science and Math, Grades K-2. |
| 2/08 | The Construction of Knowledge, Role of Social Interaction, and Developmentally Appropriate Practice; Role of Questioning, Science Center Design | Kamii Text; Chapter 3; Charlesworth Text, Unit 39  **Glyph Design Due** |
| 2/15 | Continue Science Discussion and Model Lessons; In-depth Discussion of 5E lesson model; Role of Questioning (continued), Interpretation of ALCOS | Charlesworth Text, Unit 33, 34, 35, 36 |
| 2/22 | Continue Model Lessons of Physical and Chemical Change; Patterns in Mathematics | Charlesworth Text, Unit 17,28 |
| 3/1 |  | **Exam 1** |
| 3/8 | One to One Correspondence, Number Sense and Counting, Discuss Integrated Lesson Plan Assignment | Charlesworth Text, Units 8, 9, and 16  **Science Center Design Due** |
| 3/15 | Spring Break |  |
| 3/22 | Geometry, Parts and Wholes, Measurement  Discussion of Family Project, Rubric Assessments | Charlesworth Text, Unit 12, 13, 14, 18, 19  **Integrated Lesson Plan Due** |
| 3/29 | Instructor at State Meeting in Huntsville;  Guest Speaker TBA |  |
| 4/12 | Operations on Whole Numbers | Charlesworth Text, Unit 27; Kamii Text, Chapter 5 and 6 **Family Project Due** |
| 4/19 | Place Value | Charlesworth Text, Unit 30 **Math Lesson Plan Due** |
| 4/26 |  | **Exam 2** |