

ACC Child Care & Development Dept.
CDEC 2407 Math and Science for Early Childhood
Master Syllabus

Course Description: An exploration of principles, methods, and materials for teaching young children math and science concepts through discovery and play. 3 hours per week of supervised fieldwork with young children is required. This course is only offered in Spring Semesters. (Formally CDP 1424, 1457) (4-3-3)

Prerequisites: CDEC/TECA 1311 and CDEC/TECA 1354 and CDEC 1413 or concurrent enrollment in CDEC 1413 and DEVR 0303 and DEVW 0403 or satisfactory score on appropriate placement test.

Co-requisites: CDEC 1413, and DEVR 1303 or DEVW 1403 or satisfactory score on appropriate placement test.

Required Texts: Current edition of *Science Experiences for the Early Years; An Integrated Curriculum*, by Harlan and Rivkin and *More Than Counting: Whole Math Activities for Preschool and Kindergarten*, by Moonmaw and Hieronymous, Redleaf Press

Instructional Methodology: Students will participate in a variety of activities in class including instructor lectures, group discussions and projects. In addition, a regularly scheduled lab will be required.

Course Rationale: The purpose of this course is to demonstrate the integration of math and science into classrooms for young children as well as practice doing so in an applied setting.

NAEYC Standards:

All coursework in ACC's Child Development Department include student learning opportunities and outcomes that address the National Association for the Education of Young Children's Standards for Early Childhood Professional Preparation in Associate Degree Programs. The Standards intentionally cover areas of professional preparation that are required to be sure that all young children will receive the kind of early education they need and deserve. Following are the Standards which are included in your coursework:

STANDARD 1: Promoting Child Development And Learning

- 1a:** Knowing and understanding young children's characteristics and needs
- 1b:** Knowing and understanding the multiple influences on development and learning
- 1c:** Using developmental knowledge to create healthy, respectful, supportive, and challenging learning environments

STANDARD 4: Teaching And Learning

- 4c:** Knowing and understanding the importance, central concepts, inquiry tools, and structures of content areas or academic disciplines
- 4d:** Using own knowledge and other resources to design, implement, and evaluate meaningful, challenging curriculum to promote positive outcomes

Course Objectives:

1. Relate the sequence of cognitive development to the acquisition of math and science concepts.
 - a. Summarize the sequential development of mathematical concepts.
 - b. Outline appropriate science concepts for children.
 - c. Describe how the development of mathematical concepts promotes children's thinking skills.
 - d. Explain how to promote children's cognitive development and understanding of their world through active, hands-on exploration of science concepts and processes.
 - e. Compare theories of cognitive development as they relate to math and science.

- f. Summarize how brain development affects concept formation.
 - g. Compare gender similarities and differences in the acquisition of math and science concepts.
2. Describe the scientific process and its application to the early childhood indoor and outdoor learning environments.
 - a. Explain how to encourage all children to view themselves as competent scientific explorers.
 - b. Describe ways to promote all children's ability to think scientifically (e.g., by providing opportunities to observe, describe, classify and order).
 - c. Summarize ways to nurture all children's natural curiosity by encouraging them to explore and make discoveries about their world (e.g., by using their senses to gain information, draw conclusions and report outcomes).
 3. Develop strategies which promote thinking and problem-solving skills in children.
 - a. Explain how instructional methods involving the use of various types of thinking (e.g., exploration, discovery learning, problem solving) can enhance children's mathematical and scientific understanding.
 - b. Describe how to integrate curriculum content through a variety of learning experiences so children make connections across disciplines.
 - c. Explain techniques for integrating math and science throughout the curriculum.
 - d. Plan developmentally appropriate methods that include play, small group projects, open-ended questioning, group discussion, problem solving, cooperative learning, and inquiry experiences to help children develop intellectual curiosity, solve problems, make decisions and become critical thinkers.
 - e. Brainstorm strategies to encourage girls to feel competent in math and science.
 4. Utilize observation and assessment as a basis for planning discovery experiences for the individual child.
 - a. Review a variety of assessment strategies.
 - b. Explain how assessment information is interpreted and used to provide developmentally appropriate learning activities.
 - c. Use a variety of assessment strategies to monitor children's progress in achieving outcomes and planning learning activities.
 5. Create, evaluate and/or select developmentally appropriate materials, equipment and environments to support the attainment of math and science concepts.
 - a. Evaluate children's books, software, manipulatives, music, blocks and other materials which enhance math and science concepts for developmental appropriateness.
 - b. Describe how to create indoor and outdoor environments that encourage emergent numeracy and scientific literacy by offering children varied, meaningful and concrete learning experiences.
 - c. Discuss how technology can be philosophically and physically integrated to support development of math and science concepts in the curriculum.
 - d. Explore community resources, including cultural, available for enhancing math and science concepts.
 - e. Make and use developmentally appropriate, culturally diverse and nonsexist activities and materials to support development of specific math and science concepts.
 - f. Adapt math and science activities, materials, equipment and environments for children with special needs.

SCANS Competencies: Identifying, organizing, planning, and allocates resources (**Resources**); acquiring and using information (**Information**); working with others (**Interpersonal**); reading, writing, performs arithmetic and mathematical operations, listening and speaking (**Basic Skills**); thinks creatively, makes decisions, solves problems, visualizes, knows how to learn and reasons (**Thinking Skills**); displays responsibility, self-esteem, sociability, self-management, integrity, and honesty (**Personal Qualities**).

Course and Lab Policies and Requirements:

Lab Policy: This course has 39 required hours of working in a classroom (field experiences) for young children at the ACC Lab School or the student's place of employment, if appropriate. Students are encouraged to complete at least one-third of their lab hours at the ACC Children's Lab School. To be eligible to participate in field experiences, you must meet the eligibility criteria of the Child Development's Eligibility for Field Experiences Policy. The Child Development Department's policy reflects the standards established by both:

- the Texas Department of Family and Protective Services, which is explained in the catalog and on the "Austin Community College Children's Lab School Criminal Conviction Statement for Child Development Lab Students",
- and criteria set by the Austin Independent School District for volunteer eligibility which prohibits anyone with a felony within the last five years for offenses involving moral turpitude (acts that are generally considered morally or ethically wrong, including crimes that involve dishonesty, fraud, deceit, theft, misrepresentation.)

You must complete all required hours to receive credit for this course.

Course Grading Lab Pass Statement: To successfully pass this course you must pass lab. If you do not receive a passing evaluation from your Lab School supervising teacher or from me, you may not pass the course. You may be asked to withdraw, receive an "F" or be asked to continue working on lab competencies for this course. All of this is explained in more detail on your handouts: "Procedure for Assisting Child Development Students to Improve Their Lab Practice" and the "Child Development Department Lab and Field Work Agreement".

To successfully complete the lab portion of this course, you are expected to:

- demonstrate the behaviors required in *Minimum Standards for Licensed Child Care Centers* and noted on the "Child Development Department Lab and Field Work Agreement"
- demonstrate the competencies discussed in your "Lab Expectations Handout"
- follow the policies of your lab placement site

Attendance: Each instructor will establish an attendance policy. Students must adhere to the attendance policy as stated in the individual course syllabus.

Withdrawals: Students may withdraw from one or more courses prior to the withdrawal deadline by submitting a request form to Admissions and Records. Withdrawal deadlines are published in the academic calendar. Withdrawal courses appear on the student's record with a grade of W. Until a student is officially withdrawn, the student remains on the class roll and may receive a grade of F for the course.

Students are responsible for understanding the impact withdrawing from a course may have on their financial aid, veterans' benefits, international student status, and academic standing. Students are urged to consult with their instructor or an advisor before making schedule changes.

Per state law, students enrolling for the first time in fall 2007 or later at any Texas college or university may not withdraw (receive a W) from more than six courses during their undergraduate college career. Some exceptions for good cause could allow a student to withdraw from a course without having it count toward this limit. Students are encouraged to carefully select courses; contact an advisor or counselor for assistance.

'Third attempt' course tuition

Per state law, effective spring 2006 any student taking a class for the third time or more may be charged an *additional* \$60 per credit hour unless exempted. We call it the **Rule of Three or Third Course Attempt**.

The Texas Higher Education Coordinating Board has mandated that all publicly funded higher-education institutions will not receive funding for courses a student takes for the third time or more. Without the state funding for those affected classes, ACC will charge additional tuition to pay for the cost of the class. The new "Third Course Attempt" tuition costs will not apply to developmental courses, Continuing Education courses, special-studies courses in which the content changes each time, or other select courses.

Students affected by this new policy should note the following:

- This policy affects class enrollments beginning with the fall 2002 semester (Aug. 2002).
- Financial aid may be used to cover the additional tuition charge.
- If you are taking a class for the second time and are considering a third attempt in the future, consult with your instructor and/or advisor. ACC is here to help you succeed.
- Appeals for waivers will be reviewed on a case-by-case basis by the relevant Dean of Student Services at each campus.

Incompletes: An incomplete means that there are extenuating circumstances which have prevented you from completing the class within the semester time-frame. An "I" will be given upon the request of the student only if at least 60% of course and lab work has been completed in a satisfactory manner. You will then have a limited amount of time to complete the course requirements. An automatic F results when the course is not completed as agreed upon.

Reading and Writing Requirements: This course requires that students have successfully completed the Fundamentals of Reading (DEVR 0303) and the Fundamentals of Writing (DEVW 0403) or obtained a satisfactory score on an appropriate placement test. To remain in this course, you must be concurrently enrolled in Reading Skills I (DEVR 1303) and Writing Skills I (1403) or have obtained a satisfactory score on an appropriate placement test.

Legible Assignments: I expect all assignments to be written in complete sentences and to contain understandable paragraphs. Work that does not reflect these expectations will be returned to you for correction. The ACC Labs are wonderful resources and the Lab tutors will help you be sure that your assignments meet these expectations.

Professional Ethics: You are expected to maintain professional ethics while in this course. Careful adherence to NAEYC's Professional Code of Ethics when dealing with families, children, colleagues and supervising teachers is mandatory. Information about the Code of Ethics is available on NAEYC's website at www.naeyc.org. In addition, classroom discussions and all written work must reflect our commitment to maintaining issues of confidentiality for all children and families who allow our observations.

Scholastic Dishonesty: ACC's Scholastic Dishonesty Policy is stated in the Student Handbook: "Acts prohibited by the College for which discipline may be administered include scholastic dishonesty, including but not limited to cheating on an exam or quiz, plagiarizing, and unauthorized collaboration with another in preparing outside work. Academic work submitted by students shall be the result of their thought, research or self-expression. Academic work is defined as, but not limited to tests, quizzes, whether taken electronically or on paper; projects, either individual or group; classroom presentations, and homework." Failure to comply with this policy will result in loss of course credit for the assignments and may result in withdrawal from this course.

Electronic Technology: During all tests, please be sure that all electronic technology including, cell phones, PDA's, etc., are turned off. Doing this prevents any misunderstanding about the use of the equipment for obtaining test information.

Students with Disabilities: The Student Handbook states "Each ACC campus offers support services for students with documented physical or psychological disabilities. Students with disabilities must request reasonable accommodations through the Office for Students with Disabilities on the campus where they expect to take the majority of their classes. Students are encouraged to do this three weeks before the start of the semester." The Office for Students with Disabilities for Eastview can be reached at 223-4159; Rio Grande has a TTY, 223-9000.

Student Freedom of Expression: Each student is strongly encouraged to participate in an open dialog. In any instructional situation that includes critical thinking, there are bound to be many differing viewpoints. These differences enhance the learning experience and create an atmosphere encouraging us to think and learn. I do expect that we respect the views of each other even if they differ substantially on volatile and sensitive topics.