

Crafton Hills College Course Outline

1. **Discipline:** Child Development
2. **Department:** Child Development and Education
3. **Course Title:** Creative Science and Math Activities for Children
4. **Course I.D:** CD 133
5. **Prerequisite(s):** None
Corequisite(s): None
Departmental Recommendation(s): CD 105

6. **Semester Units:** 3

7. **Minimum Semester Hours:**

Lecture: 48 **Lab:** 0 **Clinic:** 0 **Field:** 0

8. **Need for the Course:**

CD 133 is designed to meet current practices and standards for teaching science and math to children. It satisfies the training recommendations for a specialization under the Master Teacher category of the state Child Development Permit. This course also satisfies curriculum training recommendations for child care workers. This course transfers to CSU.

9. **Goals for the Course:**

- A. To satisfy the educational requirements as an elective for obtaining an Associate in Arts Degree specializing in Child Development.
- B. To satisfy part of the educational or specialization requirements for obtaining a CHC Child Development Certificate as Teacher, Master Teacher or Site Supervisor.
- C. To satisfy part of the curriculum and specialization requirements of state and community licensing agencies.
- D. Prepare students to plan and facilitate developmentally appropriate science and math curriculum for children.
- E. Prepare students to participate as instructional trainee lab students in the campus child development center.

10. **Catalog Description:**

Study of basic scientific theories and practices for teaching young children simple methods and processes of science and math. Classifying, simple reasoning, observing, making hypothesis, testing, generalizing cause and effect, using energy, matter and living things are explored. Fundamental mathematical concepts such as one to one correspondence, number sense and counting, sets and classifying, parts and wholes, basic measurements, ordering and patterning.

11. Schedule Description:

Study of basic scientific theories and practices for teaching young children simple methods and processes of science and math. Emphasis on preparing developmentally appropriate science and math experiences for children.

12. Entrance Skills:

A. Requisite Skills: None

B. Recommended Skills:

It is highly recommended that students entering this course be able to:

1. Demonstrate an understanding of cognitive, physical, social, and emotional development of children in the developmental periods.
2. Describe cognitive, physical, social and emotional developmental norms and deviations from typical development.
3. Demonstrate an understanding of how cultural and family contexts influence development.
4. Identify the components of the theoretical perspectives that have guided thinking as they pertain to human development and education.
5. Analyze and evaluate research methods and conclusions affecting our understanding of development.
6. Compare and contrast the historical perspectives regarding theory, research, and practices relating to child development.
7. Observe and record children's activities using a whole child, developmental perspective.
8. Explain positive child guidance and discipline techniques.
9. Demonstrate the ability to interact with children in developmentally appropriate ways.
10. Identify types of child abuse and reporting procedures.

13. Course Objectives:

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

- A. Identify the components of developmentally appropriate science and math curriculum for children.
- B. Plan, prepare and facilitate thematic science and math experiences with children.
- C. Describe the cognitive stages of science and math development in children.
- D. Prepare and demonstrate the use of developmentally appropriate materials to be used in science and math experiences with children.
- E. Describe a developmentally appropriate philosophy about teaching children science and math.

14. Representative Texts and Instructional Materials:

A. Texts:

McIntyre, M. (1998). *Early Childhood Science*. Arlington, VA: National Science Teachers Association (NSTA).

Harlan, J. & Rivkin, M. (2003). *Science Experiences for the Early Childhood Years: An Integrated Approach (8/e)*. Upper Saddle River, NJ: Prentice Hall.

Holt, B. (1998). *Science with Young Children*. Arlington, VA: National Science Teachers Association (NSTA).

Charlesworth, R. & Lind, K. (2003). *Math and Science for Young Children (4/e)*. Florence, KY: Delmar Learning.

Martin, D. (2001). *Constructing Early Childhood Science*. Florence, KY: Delmar Learning.

B. Videos:

Chamberlain, C. (Producer) (1986). *I Can Do It: Science and Discovery* [Motion Picture]. USA: CPC Productions.

15. Course Content:

- A.** Rationale and philosophy for a science and math program for young children
1. Cognitive view of science and math learning in young children
 2. Science and math participants
 3. Involving children, teachers and family
 4. Guiding the discovery of science and math
 5. Developing a philosophy for teaching science and math for young children
- B.** Concepts, methods and materials for teaching science and math to children in the following subject areas:
1. Plant life
 2. Animal life, mammals and insects
 3. Human body, care and nourishment
 4. What is air and wind
 5. What is water
 6. Weather and seasons
 7. Rocks, minerals and dirt
 8. Magnets
 9. Gravity
 10. Simple machines
 11. Sound
 12. Light
 13. Electricity
 14. Mathematics
 - a. Classification, seriation and numeration
 - b. One to one correspondence
 - c. Number sense and counting
 - d. Comparing
 - e. Parts and wholes
 - f. Ordering and patterning
 - g. Measurement: volume, weight, length, and temperature
 - h. Materials and resources for math
 - i. Conservation tasks
 15. Reasoning and critical thinking skills
 16. Computer science
- C.** Facilitating science and math experiences for young children
1. Preparing a safe and age appropriate environment

2. Teaching scientific methods of observing, hypothesizing and testing
3. Evaluation and intervention
4. Integrating science and math across the curriculum
5. A thematic approach to science and math for young children

16. Methods of Instruction:

- A. Lecture
- B. Videotaped instruction
- C. Assigned reading and written work
- D. Individual participation in small group and class discussions and activities
- E. Interactions with children in a child development setting

17. Assignments and Methods of Evaluation:

- A. Active class participation and attendance (5-10% of grade)
- B. Written assignments (15-30% of grade) that may include
 1. Observation and analysis of a science and math experiences in a child educational program
 2. Early childhood science and math experience notebook to include:
 - a. Science and math philosophy and practices with young children
 - b. Examples of science and math projects
 - c. Class notes, handouts and assignments
- C. Active learning (25-40% of grade) such as: Plan and implement science and math experiences with young children to include a written plan, implementation and evaluation
- D. Oral presentation of a science and math experience activity for class participation.
- E. Test and quizzes (20-50% of grade)
- F. Authentic assessment (10-20% of grade)

18. Distributed Education Methods: None