

## **Math and Science for Early Childhood (CDEC 2307)**



**Credit:** 3 semester credit hours

**Prerequisite/Co-requisite:** N/A

### **Course Description**

An exploration of principles, methods, and materials for teaching children math and science concepts and process skills through discovery and play.

### **Required Textbook and Materials**

1. *Math and Science for Young Children* by Rosalind Charlesworth and Karen Lind, 7th edition. Wadsworth, Cengage Learning Publishers.
  - a. ISBN number is 13:978142837586-4.
2. A variety of teacher made materials for utilization in the classroom.

### **Course Objectives**

Upon completion of this course, the student will be able to:

1. Relate the sequence of cognitive development to the acquisition of math and science concepts and describe the scientific process and its application to early care and education environments. (SCANS: C6, F2, F7)
2. Develop strategies which promote critical thinking and problem-solving skills in children. (SCANS: F2, F7)
3. Utilize observation and assessment as a basis for planning discovery experiences for the individual child. (SCANS: C7, C15, F2, F10)
4. Create, evaluate, and/or select developmentally appropriate materials, equipment, and environments to support the attainment of math and science concepts and skills. (SCANS: C5, C6)

### **SCANS Skills and Competencies**

Beginning in the late 1980's, the U.S. Department of Labor Secretary's Commission on Achieving Necessary Skills (SCANS) conducted extensive research and interviews with business owners, union leaders, supervisors, and laborers in a wide variety of work settings to determine what knowledge workers needed in order to perform well on a job. In 1991 the Commission announced its findings in *What Work Requires in Schools*. In its research, the Commission determined that "workplace know-how" consists of two elements: foundation skills and workplace competencies.

## Course Outline

- A. Welcome to Course
- B. Introduction of faculty and students
- C. Who am I?
- D. What am I doing here?
- E. LIT/ECDC
- F. Concept Development in Mathematics and Science
  - 1) How Concepts Develop
  - 2) How Concepts are Acquired
  - 3) Promoting Young Children's Concept Development through Problem Solving
  - 4) Assessing the Child's Developmental Level
  - 5) The Basics of Science
  - 6) How Young Scientists Use Concepts
  - 7) Planning for Science
- G. Fundamental Concepts and Skills
  - 1) One-to One Correspondence
  - 2) Number Sense and Counting
  - 3) Logic and Classifying
  - 4) Comparing
  - 5) Early Geometry: Shape
  - 6) Early Geometry: Spatial Sense
  - 7) Parts and Wholes
  - 8) Language and Concept Formation
  - 9) Fundamental Concepts in Science
- H. Applying Fundamental Concepts, Attitudes, and Skills
  - 1) Ordering, Seriation, and Patterning
  - 2) Measurement: Volume, Weight, Length, and Temperature
  - 3) Measurement: Time
  - 4) Interpreting Data Using Graphs
  - 5) Applications of Fundamental Concepts in Preprimary Science
  - 6) Integrating the Curriculum through Dramatic Play and Thematic Units and Projects
- I. The Math and Science Environment
  - 1) Materials and Resources for Math and Science
  - 2) Math and Science in Action
  - 3) Math and Science in the Home

## Grade Scale

1000-900 points	A
899-800	B
799-700	C
699-600	D
599- 0	F

### **Course Evaluation**

Final grades will be calculated according to the following criteria:

Course Participation	400%
Course Attendance	100%
Course Assignments	400%
Final Assignment	100%

### **Course Requirements**

1. Theme Assignment
2. Math & Science Center Evaluation Assignment
3. Math & Science Activity Presentation
4. Cooking Assignment

### **Course Policies**

1. No food, drinks, or use of tobacco products in class.
2. Beepers, telephones, headphones, and any other electronic devices must be turned off while in class.
3. Do not bring children to class.
4. No late assignments will be accepted.
5. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an 'F' in the course.

### **Disabilities Statement**

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

## Course Schedule

<b>Weeks</b>	<b>Topic</b>	<b>Reference</b>
Week 1	Section 1: Concept Development in Mathematics and Science	pg.1-102
Week 2	Section 2: Fundamental Concepts And Skills Unit 8: One-to-One Correspondence	pg. 103-214 pg. 104-116
Week 3	Unit 9: Number Sense and Counting Unit 10: Logic and Classifying	pg. 117-132 pg. 133-145
Week 4	Unit 11: Comparing Unit 14: Parts and Wholes	pg. 146-155 pg. 179-187
Week 5	Unit 15: Language and Concept Formation Theme Presentation	pg. 188-197
Week 6	Section 3: Applying Fundamental Concepts, Attitudes, and Skills Unit 17: Ordering, Seriation, and Patterning	pg. 215-284 pg. 216-230
Week 7	Unit 18: Measurement: Volume, Weight, Length, and Temperature Unit 19: Measurement: Time Unit 20: Interpreting Data Using Graphs	pg. 231-242 pg. 243-255 pg. 256-264
Week 8	Section 4: Symbols and Higher-Level Unit 23: Symbols	pg. 285-336 pg. 286-298
Week 9	Section 6: Using Skills, Concepts, and Attitudes for Scientific Investigations in the Primary Grades Unit 34: Life Science	pg. 435-512 pg. 450-465
Week 10	Unit 35: Physical Science Unit 36: Earth and Space	pg. 466-477 pg. 478-490
Week 11	Unit 39: Environmental Awareness Unit 38: Health and Nutrition	pg. 491-498 pg. 499-512
Week 12	Section 7: The Math and Science Environment	pg. 513-552
Week 13	Overview Math and Science Activity Presentation	
Week 14	Final Review Final	

## Contact Information:

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