

CATALOG INFORMATION

Dept and Nbr: CHLD 55.2 Title: EXPLORE SCIENCE/MATH YC
Full Title: Exploring Science and Math with Young Children
Last Reviewed: 9/26/2022

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable
Grading: Grade or P/NP
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:
Formerly: CHILD 55.2

Catalog Description:
This course familiarizes students with constructivist theories of cognitive development and their application in the early childhood classroom. Students will actively explore and develop math and science concepts suitable for young children and learn to implement age-appropriate curriculum for children ages 0-8.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 1A OR EMLS 10 (formerly ESL 10) AND Course Completion of CHLD 10 and CHLD 90.4; OR Course Completion of CHLD 110.1, CHLD 110.2 and CHLD 90.4

Limits on Enrollment:

Schedule of Classes Information:
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Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area	Effective:	Inactive:
CSU GE:	Transfer Area	Effective:	Inactive:
IGETC:	Transfer Area	Effective:	Inactive:
CSU Transfer:	Transferable	Effective: Fall 1987	Inactive:
UC Transfer:		Effective:	Inactive:

CID:**Certificate/Major Applicable:**

Both Certificate and Major Applicable

COURSE CONTENT**Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Define goals and key experiences in early math and science learning.
2. Analyze math and science activities for young children that reflect developmentally appropriate and constructivist practices.
3. Describe curriculum practices that promote scientific inquiry in young children.

Objectives:

At the conclusion of this course, the student should be able to:

1. Develop, demonstrate, and assess math and science activities for young children utilizing constructivist teaching practices.
2. Define and evaluate developmentally appropriate math and science curriculum for young children.
3. Create environments that support math and science learning for young children.
4. Identify foundational knowledge and skills necessary for learning math.
5. Develop awareness of how gender and racial bias may affect children's achievement in math and science and incorporate teaching methods that are bias-free.
6. Foster and support children's natural curiosity about the world around them.
7. Assess the possibilities of loose parts, including those occurring in nature, for use in the creation of science and math projects.

Topics and Scope:

- I. Constructivist Theories of Cognitive Development
 - A. Theorists

1. Piaget
2. Vygotsky
- B. Current theories of promoting hands-on learning
- C. Brain development research
- D. Developmentally appropriate practices
- II. Development and Assessment of Quality Math and Science Experiences
 - A. Identifying and building on children's experiences
 - B. Developing activities and units of study
 1. Using an integrated curriculum
 2. Active involvement and hands-on curriculum techniques
 3. Promoting questioning strategies on the part of both children and teachers
 4. Modifying activities for developmental stages
 - C. Creating interesting and inviting math and science environments
 1. Classroom learning centers
 2. Nature displays
 3. Age-appropriate curriculum and materials
 - D. Establishing a foundation for Science, Technology, Engineering, and Math (STEM) learning
 - E. Using assessment tools
 1. Using the Desired Results Developmental Profiles (DRDP) observation tool in math and science
 2. Using environmental assessment tools to evaluate science and math curriculum
- III. Survey of Math Concepts and Related Activities
 - A. Matching and patterning
 - B. Numbers, counting, and sets
 - C. Quantification
 - D. Ordering and sequencing
 - E. Comparing, classifying, and graphing
 - F. Spatial awareness, geometry, and shapes
 - G. Parts and wholes
- IV. Survey of Science, Concepts, and Related Activities
 - A. Scientific method with young children
 - B. Physical knowledge
 1. Sensory experiences
 2. Movement and physical science
 3. Cause and effect
 4. Transformations and change processes
 - C. Children and nature
 1. Outdoor education
 2. Activities related to nature and the seasons
 3. Plants and gardening
- V. Resources for Teaching Math and Science
 - A. Loose parts
 - B. Natural objects and materials
 - C. Recycled materials
 - D. Appropriate games, toys, and learning materials
 - E. Teacher resources, including web-based materials, curriculum kits, and books
 - F. California Preschool Learning Foundations and Framework
- VI. Children's Math and Science Library
 - A. Books and other media for children
 - B. Books and other media for teachers
- VII. Equity Issues in Teaching Science and Math

- A. Understanding bias in teaching math and science
- B. Creating strategies for an inclusive curriculum

Assignment:

Reading:

1. Reading of text and instructor prepared materials (approximately 10 pages per week)

Writing:

1. Written reflections/assessments of math and science activities (6-8 papers, approximately 750 words each)
2. Written reading responses (3-4 papers, approximately 750 words each)
3. Written observation report of math or science curriculum in an early childhood setting (1-2 papers, approximately 1000 words each)

Skill Demonstrations:

1. Development and oral presentation of curriculum plans demonstrating age-appropriate use of materials and incorporation of attractive, inviting environments (3-4 plans; at least 1 developed as group project)

Other:

1. Participation in class discussions and in-class activities

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Activity reflections/assessments, reading responses, observation report(s)

Writing
40 - 60%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None

Problem solving
0 - 0%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Class presentations of curriculum plans

Skill Demonstrations
20 - 45%

Exams: All forms of formal testing, other than skill performance exams.

None

Exams
0 - 0%

Other: Includes any assessment tools that do not logically fit into the above categories.

Participation in class discussions and in-class activities

Other Category
15 - 25%

Representative Textbooks and Materials:

Worms, Shadows, and Whirlpools: Science in the Early Childhood Classroom. Worth, Karen and Grollman, Sharon. NAEYC. 2003 (classic)

Spotlight on Young Children: Exploring Math by Teaching Young Children. editors. NAEYC. 2016 (classic)

Exploring Math and Science in Preschool by Teaching Young Children. editors. NAEYC. 2015 (classic)

California Preschool Learning Foundations and Framework, Volume 1 (Math); Volume 3 (Science), California Department of Education. 2014. (classic)