

SAN DIEGO COMMUNITY COLLEGE DISTRICT
CONTINUING EDUCATION

COURSE OUTLINE

SECTION 1

SUBJECT AREA AND COURSE NUMBER

HMDV 594

COURSE TITLE

3-5 Yr-Old: STEAM Education

ALTERNATE TITLES

STEAM Education: 3-5 Yr-Olds

TYPE COURSE

NON-FEE

VOCATIONAL

CATALOG COURSE DESCRIPTION

This course provides a specialized understanding of the theories, benefits, and applications of science, technology, engineering, arts, and math (STEAM) education in a preschool classroom. The knowledge gained will prepare students to develop and implement STEAM education activities that address individualized needs, curriculum best practices, and classroom mechanics, in an equitable and inclusive preschool setting.

LECTURE/LABORATORY HOURS

72

ADVISORIES

NONE

RECOMMENDED SKILL LEVEL

NONE

INSTITUTIONAL STUDENT LEARNING OUTCOMES

1. Social Responsibility
SDCE students demonstrate interpersonal skills by learning and working cooperatively in a diverse environment.

INSTITUTIONAL STUDENT LEARNING OUTCOMES (CONTINUED)

2. Effective Communication
SDCE students demonstrate effective communication skills.
3. Critical Thinking
SDCE students critically process information, make decisions, and solve problems independently or cooperatively.
4. Personal and Professional Development
SDCE students pursue short term and life-long learning goals, mastering necessary skills and using resource management and self-advocacy skills to cope with changing situations in their lives.

COURSE GOALS

1. Understand theoretical foundations of STEAM education for preschool children.
2. Recognize the benefits of STEAM education in preschool children.
3. Learn how to create STEAM curricula for a preschool classroom including specialized considerations and integrated learning.
4. Demonstrate an understanding of classroom management and curriculum implementation strategies for use in an equitable and inclusive preschool learning environment.

COURSE OBJECTIVES

1. Describe theoretical foundations of STEAM education for preschool children.
2. Identify and analyze the benefits of STEAM education for preschool children.
3. Design integrated STEAM education curriculum including specialized considerations.
4. Determine effective classroom management and curriculum implementation strategies for use in an equitable and inclusive preschool learning environment.

SECTION II

COURSE CONTENT AND SCOPE

1. Theoretical Foundations of STEAM Education
 - 1.1. Creating equitable and inclusive learning environments
 - 1.2. Adult—led and child-initiated learning experiences
 - 1.3. Promoting inquiry, curiosity, and analysis
 - 1.4. The Scientific Method
 - 1.5. 5E Instructional Model- Engage, explore, extend, explain, evaluate
 - 1.6. Project-based learning
 - 1.7. Problem-solving approaches
2. Benefits of STEAM Education
 - 2.1. Executive functions
 - 2.2. Real-world skills

COURSE CONTENT AND SCOPE (CONTINUED)

- 2.3. Critical Thinking
- 2.4. Open-ended questioning
- 2.5. Collaboration
- 2.6. Integrated learning
- 2.7. Literacy development
- 2.8. Attention and retention
- 3. Specialized Consideration for STEAM Education
 - 3.1. Vocabulary
 - 3.1.1. Observe, predict, discuss, hypothesize
 - 3.1.2. Design, plan, investigate, construct
 - 3.1.3. Problem-solve, report, communicate, discuss, conclude
 - 3.2. Hypothesis development and testing
 - 3.2.1. Measurement
 - 3.2.2. Comparisons
 - 3.2.3. Experimentation
 - 3.2.4. Investigation
 - 3.3. Data collection and sharing
- 4. STEAM Education Practices
 - 4.1. Teaching Science
 - 4.1.1. Inquiry, hypothesis testing, reporting
 - 4.1.2. Experimentation
 - 4.1.3. Indoor and outdoor environments
 - 4.1.4. Classification and categorization
 - 4.1.5. Earth Science
 - 4.1.6. Life Sciences
 - 4.1.7. Physical Sciences
 - 4.2. Teaching Technology
 - 4.2.1. Non-electronic technology
 - 4.2.1.1. Building kits and supplies
 - 4.2.1.2. Blocks
 - 4.2.1.3. Tools
 - 4.2.1.4. Art/craft supplies
 - 4.2.1.5. Toys, manipulatives, learning resources
 - 4.2.1.6. Scales, magnets
 - 4.2.2. Electronic technology
 - 4.2.2.1. Computers
 - 4.2.2.2. Tablets
 - 4.2.2.3. Speakers/Microphones
 - 4.2.2.4. Electronic toys and instruments
 - 4.2.2.5. Circuits
 - 4.3. Teaching Engineering:
 - 4.3.1. Design
 - 4.3.2. Create
 - 4.3.3. Construct

COURSE CONTENT AND SCOPE (CONTINUED)

- 4.3.4. Test
- 4.3.5. Problem-solving
- 4.4. Teaching the arts
 - 4.4.1. Integrated learning
 - 4.4.1.1. Performing arts (e.g. music, dance, drama, poetry, puppetry)
 - 4.4.1.2. Visual arts
 - 4.4.1.3. Literature
- 4.5. Teaching mathematics
 - 4.5.1. Number concept
 - 4.5.2. Counting
 - 4.5.3. Mathematical operations
 - 4.5.4. Spatial relationships
 - 4.5.5. Shapes
 - 4.5.6. Patterns
 - 4.5.7. Measurement and data
 - 4.5.8. Number sentences
 - 4.5.9. Word problems
 - 4.5.10. Sequencing
- 5. Classroom Environment and Family-Engagement
 - 5.1. Classroom management
 - 5.1.1. Classroom set-up
 - 5.1.2. Stations
 - 5.1.3. Adult-led vs. child-initiated learning
 - 5.1.4. Materials
 - 5.1.5. Collaboration
 - 5.1.6. Pedagogical methods
 - 5.1.7. Curriculum development
 - 5.2. Engaging families
 - 5.3. Assessment and evaluation

APPROPRIATE READING

Appropriate readings may include, but are not limited to, periodical, magazines, instructor written materials, instructor selected URL's and other publications related to the current subject matter.

WRITING ASSIGNMENTS

Writing assignments may include, but are not limited to, students compile and complete various written works throughout the course of the semester to record new knowledge and insights they have gained and to document their progress.

OUTSIDE ASSIGNMENTS

Outside assignments may include, but are not limited, using knowledge gained in class; students will develop STEAM curricula. An example would be developing a math game that would relate quantity to symbol.

APPROPRIATE ASSIGNMENTS THAT DEMONSTRATE CRITICAL THINKING

Assignments which demonstrate critical thinking may include, but are not limited to, students evaluating STEAM curriculum and implementing preschool classroom and teaching practices that foster the needs of preschoolers.

EVALUATION

Assessments may include but are not limited to quizzes, discussions, reflections, assignments, demonstrations, and capstone projects.

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Upon successful completion of each individual course a Certificate of Course Completion will be issued. Upon successful completion of all courses included in the program, a Certificate of Program Completion will be issued.

METHOD OF INSTRUCTION

Methods of instruction may include, but are not limited to, lectures, discussion, hands-on demonstrations, computer-assisted instruction, laboratory assignments, guest speakers and participation with children, ages 3 to 5 years, in a laboratory setting, and field trips.

This course, or sections of this course, may be offered through distance education.

TEXTS AND SUPPLIES

Textbooks include, but may not be limited to:

Teaching STEM in the Preschool Classroom: Exploring Big Ideas with 3- to 5-Year-Olds (Early Childhood Education Series), Alissa A. Lange, Kimberly Brennenman, Hagit Mano, & Betty Zan, Teachers College Press, New York, NY, current edition.

PREPARED BY Rachel Rose, Lee Thompson DATE May 5, 2021

REVISED BY _____ DATE _____

Instructors must meet all requirements stated in Policy 3100 (Student Rights, Responsibilities and Administrative Due Process), and the Attendance Policy set forth in the Continuing Education Catalog.

REFERENCES:

San Diego Community College District Policy 3100
California Community Colleges, Title 5, Section
55002 Continuing Education Catalog