

CDE 232: SCIENCE, TECHNOLOGY, ENGINEERING & MATH IN ECE

Formerly known as:

ECE 038 (or if cross-listed - inactivated courses associated with this course)

Originator

wsanders

Co-Contributor(s)**Name(s)**

Avalos, Maria

Justification / Rationale

Every two years we regularly review CDE courses according to CTE requirements.

Effective Term

Fall 2023

Credit Status

Credit - Degree Applicable

Subject

CDE - Child Development & Education

Course Number

232

Full Course Title

Science, Technology, Engineering & Math in ECE

Short Title

STEM CONCEPTS

Discipline**Disciplines List**

Child Development/Early Childhood Education

Modality

Face-to-Face

100% Online

Hybrid

Catalog Description

This course explores the development of curriculum ideas for teaching about scientific, mathematical, engineering, and technology (STEM) concepts to young children.

Schedule Description

Students will explore science, technology, engineering, and mathematical (STEM) concepts and their application in the early childhood classroom. Prerequisite: CDE 101

Lecture Units

3

Lecture Semester Hours

54

In-class Hours

54

Out-of-class Hours

108

Total Course Units

3

Total Semester Hours

162

Prerequisite Course(s)

CDE 101

Required Text and Other Instructional Materials**Resource Type**

Book

Open Educational Resource

No

Formatting Style

APA

Author

Moomaw, S.

Title

Teaching STEM in the Early Years: Activities for Integrating Science, Technology, Engineering, and Mathematics

Edition

1st

Publisher

Redleaf Press

Year

2013

College Level

Yes

Flesch-Kincaid Level

12

ISBN #

9781605541211

Resource Type

Web/Other

Open Educational Resource

Yes

Description

California Preschool Curriculum FrameworkCalifornia Preschool Foundations, Volume 1, 2, and 3
Preschool Program Guidelines Available from California Department of Education Press as Free Downloads
<http://www.cde.ca.gov/sp/cd/re/cddpublications.asp>

Resource Type

Web/Other

Open Educational Resource

Yes

Year

2019

Description

Early Edu Washington State Open Course Resource.
As members in the Early Edu community COD faculty have access to the full course content.
<https://earlyedu.instructure.com/courses/445>

Resource Type

Book

Open Educational Resource

No

Formatting Style

APA

Author

Jean Barbre

Title

Baby Steps to STEM Infant and Toddler

Edition

1

City

St. Paul, MN

Publisher

Redleaf Press

Year

2017

College Level

Yes

Flesch-Kincaid Level

12

ISBN #

978-1605545080

For Text greater than five years old, list rationale:

The core text remains current with early childhood understanding about teaching STEM to preschool children. We have added an additional infant/toddler focused STEM book that was first published 2017.

Class Size Maximum

35

Entrance Skills

Students must understand major developmental theories and developmental stages to be able to apply them in the classroom with children across diverse developmental domains of language, cognition, social, emotional, physical and creative development. Students must be able to grasp why they are teaching and what they are teaching in STEM to be able to effectively address developmental milestones, needs and enhance children's capabilities.

Requisite Course Objectives

CDE 101-Evaluate the influence of multiple contexts on children's development.
 CDE 101-Summarize developmental stages and milestones.

Course Content

Lecture:

1. Integrating STEM concepts throughout the indoor and outdoor environment.
2. Sequence of basic mathematical concepts and their importance.
3. Review of Theories of Cognitive Development.
4. Integrating technology and engineering activities in classroom centers.
5. Create activity plans for science, math, technology and engineering.
6. Create and demonstrate homemade math and science activities.
7. Construction of teacher-made activities.
8. Evaluate the use of technology in the ECE classroom by children and by adults according to NAEYC criteria.
9. Read and summarize research related to cognitive neuroscience and child development

Course Objectives

	Objectives
Objective 1	Describe and explain the basic principles of STEM in relation to a child's perspective and development.
Objective 2	Design and implement STEM curricula that will show enthusiasm and appreciation for the subject.
Objective 3	Explain how children learn STEM concepts.
Objective 4	Identify appropriate STEM curricula experiences and materials.
Objective 5	Read and apply the most recent research about child development and cognition.

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Integrate STEM concepts into curriculum by developing lessons and play materials and models to help children explore basic STEM concepts.
Outcome 2	Organize and present learning activities that expand cognitive processes for young children according to best and promising practices that incorporate the latest research in child development and neuroscience
Outcome 3	Develop play materials and models to help children explore basic STEM concepts.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Observation	Students will view at least three classrooms (toddler, preschool and early elementary) and educational settings to see integrated STEM concepts.
Lecture	Instructor will conduct lectures regarding course objectives.
Experiential	Students will engage in STEM activities designed for children ages 0-8 and will reflect on how to implement them.
Collaborative/Team	Students will work in teams to create and share STEM activities.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Product/project development evaluation	Students will create STEM games and activities. They will bring to class and present to each other for evaluation.	In and Out of Class
Group activity participation/observation	Students will interact with STEM materials in small groups while others observe and note the learning opportunities.	In Class Only

Field/physical activity observations	Students will observe classrooms to identify best and promising practices in STEM education for children ages 0-8. They will observe in several age ranges and will present results of their observations to the class for discussion and critique.	In and Out of Class
Portfolios	Students will create a portfolio artifact that will summarize what they learned in this course and how they plan to continue their learning in this subject.	Out of Class Only
Other	Lesson plans : students will create and present developmentally appropriate lesson plans for STEM learning for children ages 0-8	Out of Class Only

Assignments

Other In-class Assignments

1. Develop material tests for math and science experiences.
2. Presentations/student demonstration.
3. Group activity/participation/observation.

Other Out-of-class Assignments

1. Read textbook.
2. Compile an activity file which includes lesson plans and activities specific with curriculum materials.
3. Construct teacher-made math materials that are developmentally appropriate.
4. Compose a parent letter explaining Early Childhood Philosophy of math and science education.
5. Research, read and summarize three peer-reviewed journal articles related to cognitive neuroscience.

Grade Methods

Letter Grade Only

Distance Education Checklist

Include the percentage of online and on-campus instruction you anticipate.

Online %

70

On-campus %

30

Instructional Materials and Resources

Effective Student/Faculty Contact

Which of the following methods of regular, timely, and effective student/faculty contact will be used in this course?

Within Course Management System:

Chat room/instant messaging
 Discussion forums with substantive instructor participation
 Online quizzes and examinations
 Private messages
 Regular virtual office hours
 Timely feedback and return of student work as specified in the syllabus
 Video or audio feedback
 Weekly announcements

External to Course Management System:

Direct e-mail
 E-portfolios/blogs/wikis
 Posted audio/video (including YouTube, 3cm mediasolutions, etc.)
 Synchronous audio/video
 Telephone contact/voicemail

USPS mail

For hybrid courses:

Field trips
Library workshops
Orientation, study, and/or review sessions
Scheduled Face-to-Face group or individual meetings

Other Information

MIS Course Data

CIP Code

13.1210 - Early Childhood Education and Teaching.

TOP Code

130500 - Child Development/Early Care and Education

SAM Code

C - Clearly Occupational

Basic Skills Status

Not Basic Skills

Prior College Level

Not applicable

Cooperative Work Experience

Not a Coop Course

Course Classification Status

Credit Course

Approved Special Class

Not special class

Noncredit Category

Not Applicable, Credit Course

Funding Agency Category

Not Applicable

Program Status

Program Applicable

Transfer Status

Transferable to CSU only

Allow Audit

No

Repeatability

No

Materials Fee

No

Additional Fees?

No

Files Uploaded

Attach relevant documents (example: Advisory Committee or Department Minutes)

ECE_CommitteeMinutes March 14 2018.pdf

CDE_Mail In Vote on Course Modifications Spring 2022.pdf

Approvals

Curriculum Committee Approval Date

10/04/2022

Academic Senate Approval Date

10/13/2022

Board of Trustees Approval Date

11/10/2022

Chancellor's Office Approval Date

12/09/2019

Course Control Number

CCC000609928

Programs referencing this course

Early Childhood Education Master Teacher Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=129>)

Early Childhood Education AS Degree (<http://catalog.collegeofthedesert.eduundefined/?key=62>)