

## Course Syllabus

Course: **CDEC 2307.200 ~ Math and Science for Young Children**  
Semester: Summer 2021 (10 weeks) June 1 – August 10  
Class times: Monday 6:00-8:00pm and Online/Blackboard  
Instructor: Cherri Stallings  
Office: Reese Campus, Building #5  
Office Hours: By appointment  
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*"South Plains College improves each student's life."*

## General Course Information

### Course Description

This course is designed to provide an exploration of principles, methods, and materials for teaching children math and science concepts through discovery and play.

Student Learning Outcomes	NAEYC Standards [see attached]
Relate the sequence of cognitive development to the acquisition of math and science concepts and describe the scientific process and its application to the early childhood indoor and outdoor learning environments.	Standard 1 – Child Development
Develop strategies which promote thinking and problem-solving skills in children.	Standard 1 – Child Development
Create, evaluate, and/or select developmentally appropriate materials, equipment and environments to support the attainment of math and science concepts.	Standard 4- Using DAP

### Course Objectives

All objectives correlate with Foundation Skills F1, F2, F5, F6, and Scans Competencies C1, C3, C18.

#### 1. Relate the sequence of cognitive development to the acquisition of math and science concepts.

- Summarize the sequential development of mathematical concepts.
- Outline appropriate science concepts for children.
- Describe how the development of mathematical concepts promotes children's thinking skills. (F11)
- Explain how to promote children's cognitive development and understanding of their world through active, hands-on exploration of science concepts and processes. (F11)
- Compare theories of cognitive development as they relate to math and science. (F12).
- Summarize how brain development affects concept formation.
- Compare gender similarities and differences in the acquisition of math and science concepts. (C14)

#### 2. Describe the scientific process and its application to the early childhood indoor and outdoor learning environments.

- Explain how to encourage all children to view themselves as competent scientific explorers.
- Describe ways to promote all children's ability to think scientifically (e.g., by providing opportunities to observe, describe, classify, and order.)
- Summarize ways to nurture all children's natural curiosity by encouraging them to explore and make discoveries about their world (e.g., by using their senses to gain information, draw conclusion and report outcomes)

#### 3. Develop strategies that promote thinking and problem-solving skills in children. (F9, F10)

- Explain how instructional methods involving the use of various types of thinking (e.g., exploration, discovery learning, problem solving) can enhance children's mathematical and scientific understanding.
- Describe how to integrate curriculum content through a variety of learning experiences so children make connections across disciplines.
- Explain techniques for integrating math and science throughout the curriculum.
- Plan developmentally appropriate methods that include play, small group projects, open-ended questioning, group discussions, problem solving, cooperative learning and inquiry experiences to help children develop intellectual curiosity, solve problems, make decisions and become critical thinkers. (F7)
- Brainstorm strategies to encourage girls to feel competent in math and science. (C14)

**4. Utilize observation and assessment as a basis for planning discovery experiences for the individual child.**

- a. Review a variety of assessment strategies. (C5)
- b. Explain how assessment information is interpreted and used to provide developmentally appropriate learning activities. (C7)
- c. Use a variety of assessment strategies to monitor children’s progress in achieving outcomes and planning learning activities.

**5. Create, evaluate and/or select developmentally appropriate materials, equipment and environments to support the attainment of math and science concepts. (F 9, F7)**

- a. Evaluate children’s books, software, manipulatives, music, blocks and other materials that enhance math and science concepts for developmentally appropriateness. (C1, C5)
- b. Describe how to create indoor and outdoor environments that encourage emergent numeracy and scientific literacy by offering children varied, meaningful and concrete learning experiences. (F7)
- c. Discuss how technology can be philosophically integrated to support the development of math and science concepts in the curriculum.
- d. Explore community resources, including cultural, available for enhancing math and science concepts. (C9)
- e. Make and use developmentally appropriate, culturally diverse and nonsexist activities and materials to support development of specific math and science concepts. (C9, C14)
- f. Adapt math and science activities, materials, equipment and environments for children with special needs. (C14)

**Evaluation Methods**

- Regular class attendance and participation
- Completion of online activities
- Completion of written assignments, individual projects, and presentations

**Academic Integrity**

It is the aim of the faculty of South Plains College to foster a spirit of complete honesty and a high standard of integrity. The attempt of any student to present as his or her own any work which he or she has not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offender liable to serious consequences, possibly suspension.

**Cheating:** Dishonesty of any kind on examinations or on written assignments, illegal possession of examinations, the use of unauthorized notes during an examination, obtaining information during an examination from the textbook or from the examination paper of another student, assisting others to cheat, alteration of grade records, illegal entry or unauthorized presence in the office are examples of cheating. Complete honesty is required of the student in the presentation of any and all phases of coursework. This applies to quizzes of whatever length, as well as final examinations, to daily reports and to term papers.

**Plagiarism:** Offering the work of another as one's own, without proper acknowledgment, is plagiarism; therefore, any student who fails to give credit for quotations or essentially identical expression of material taken from books, encyclopedias, magazines and other reference works, or from themes, reports or other writings of a fellow student, is guilty of plagiarism.

**SCANS & Foundation Skills**

Resources Information	Interpersonal Systems	Basic Skills Thinking Skills	Personal Qualities
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**Specific Course Information**

**Textbook**

Not textbook required. A pdf version of the textbook for this course will be provided in Blackboard.

**Computer Requirements**

*Computer & internet access for WEEKLY online work, including Microsoft Word, Adobe Reader, anti-virus software*

See IT information here: <https://www.southplainscollege.edu/instructional-technology/instructional-technology.php>

## Attendance Policy

1. Students are expected to be punctual and attend all classes; participation is a component of final grades.
2. Attendance will be taken at each class session using the sign-in process. It is the student's responsibility to sign in at the beginning of each class.
3. Attendance for online work will be documented through Blackboard.
4. More than 2 absences may result in withdrawal of the student from class. (Two incidences of arriving late or leaving early will equal one absence.)
5. Students are responsible for all announcements concerning reading assignments, examination dates, etc. that are made during class periods, whether or not they are present when the announcement is made.
6. In cases of excessive absence, or failure to complete assignments, students should consider withdrawing from the course to protect overall GPA. Drop date for the college is **August 3, 2021**.

## Assignment Policy

Students are responsible for reading and being prepared for each class. All written work is due on the given date. Late assignments will result in the loss of 10% each week, up to two weeks. Assignments will NOT be accepted after the 2-week limit, unless prior arrangements have been made with the instructor.

## Grading Policy

F2F Attendance (10X35)	350 points
Online Work (7 X 50)	350 points
Science Project	150 points
<u>Math Project</u>	<u>150 points</u>
	1000 points

<b>Final Grades:</b>	
900 - 1000	A
800 - 899	B
750 - 799	C
700 - 749	D
699 & below	F

A course grade of "**C**" - **75%** (750) or above is required for credit to be applied to Child Development degree or certificate.

## Communication Policy

- **Blackboard** is an e-Education platform designed to enable educational innovations everywhere by connecting people and technology. This educational tool will be used in this course throughout the semester.
- Communication between instructor and students may also utilize **South Plains College email**. Students are encouraged to check SPC email accounts on a regular basis. **If you need to email the instructor you need to have the subject of the email to be CDEC 2307: Math and Science for Young Children followed by the subject of the email. Example: CDEC 2307: Math and Science for Young Children Question about Assignment 1**

## Student Conduct

Students are expected to follow the standards of student conduct as defined in the SPC Student Guide.

## Campus Carry

Campus Concealed Carry - Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in South Plains College buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to the SPC policy at: ([http://www.southplainscollege.edu/human\\_resources/policy\\_procedure/hhc.php](http://www.southplainscollege.edu/human_resources/policy_procedure/hhc.php)) Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.

## Special Requirements

- Cell Phones – Cell phones are to be turned OFF during scheduled class periods, unless prior approval has been given from the instructor. This includes text messaging!
- Missed classes – Information should be obtained from instructor before or after class. Class time will not be used for make-up concerns.



## COURSE OUTLINE

### Concept Development

Fundamental Math Concepts like:

Comparing

Classifying

Measuring

### Math in Early Childhood

How and why to support math in early childhood classrooms;

How to use developmentally appropriate practices in math;

Discussing formal and informal math instruction;

Develop math lessons

Discuss the five math strands.

Numbers and Operations

Geometry and Spatial Reasoning

Measurement

Algebra and Patterns

Analyzing Data

### Including Planned Mathematics into Daily Routines

How to use Math throughout the day.

Discuss integrating math into read alouds.

Setting up a math center.

### Science in the Early Childhood Classroom

Recognize how observation and gathering information are skills used when exploring science rather than relying on memory to determine results.

Laying the foundation for scientific thinking.

Use the "Five E's" to facilitate inquiry during classroom experiments.

Recognize ideal locations, materials, and themes to consider when setting up a Science Center.

### Science as a Process

Recognize and illustrate key points of "free discovery".

Explore the concept of a science board and how it can be used to plan science activities.

Develop a thematic science activity using a Science Board.

## ACCOMODATIONS

### Diversity Statement

In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

### Disabilities Statement

Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability. For more information, call or visit the Disability Services Office in rooms 809 and 811, Reese Center Building 8, 806-716-4675.

### Pregnancy Accommodations Statement

If you are pregnant, or have given birth within six months, Under Title IX you have a right to reasonable accommodations to help continue your education. To activate accommodations you must submit a Title IX pregnancy accommodations request, along with specific medical documentation, to the Director of Health and Wellness. Once approved, notification will be sent to the student and instructors. It is the student's responsibility to work with the instructor to arrange accommodations. Contact Crystal Gilster, Director of Health and Wellness at 806-716-2362 or email [cgilster@southplainscollege.edu](mailto:cgilster@southplainscollege.edu) for assistance.

## SCANS COMPETENCIES

### RESOURCES

- C-1 TIME – Selects goals-relevant activities, ranks them, allocates time, prepares and follows schedules.
- C-2 MONEY – Uses or prepares budgets, makes forecasts, keeps records and makes adjustments to meet objectives.
- C-3 MATERIALS AND FACILITIES – Acquires, stores allocates, and uses materials or space efficiently.
- C-4 HUMAN RESOURCES – Assesses skills and distributes work accordingly, evaluates performances and provides feedback.

### INFORMATION – Acquires and Uses Information

- C-5 Acquires and evaluates information.
- C-6 Organizes and maintains information.
- C-7 Interprets and communicates information.
- C-8 Uses computers to process information.

### INTERPERSONAL – Works with Others

- C-9 Participates as members of a team and contributes to group effort.
- C-10 Teaches others new skills.
- C-11 Serves Clients/Customers – works to satisfy customer's expectations.
- C-12 Exercises Leadership – communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies.
- C-13 Negotiates – works toward agreements involving exchanges of resources; resolves divergent interests.
- C-14 Works with Diversity – works well with men and women from diverse backgrounds.

### SYSTEMS – Understands Complex Interrelationships

- C-15 Understands Systems – knows how social, organizational, and technological systems work and operates effectively with them.
- C-16 Monitors and Corrects Performance – distinguishes trends, predicts impacts on system operations, diagnoses systems performance and corrects malfunctions.
- C-17 Improves or Designs Systems – suggests modifications to existing systems and develops new or alternative systems to improve performance.

### TECHNOLOGY – Works with a Variety of Technologies

- C-18 Selects Technology – chooses procedures, tools, or equipment, including computers and related technologies.
- C-19 Applies Technology to Task – understand overall intent and proper procedures for setup and operation of equipment.
- C-20 Maintains and Troubleshoots Equipment – prevents, identifies, or solves problems with equipment, including computers and other technologies.

## FOUNDATIONS SKILLS

### BASIC SKILLS—Reads, Writes, Performs Arithmetic and Mathematical Operations, Listens and Speaks

- F-1 Reading—locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules.
- F-2 Writing—communicates thoughts, ideas, information and messages in writing and creates documents such as letters, directions, manuals, reports, graphs, and flow charts.
- F-3 Arithmetic—performs basic computations; uses basic numerical concepts such as whole numbers, etc.
- F-4 Mathematics—approaches practical problems by choosing appropriately from a variety of mathematical techniques.
- F-5 Listening—receives, attends to, interprets, and responds to verbal messages and other cues.
- F-6 Speaking—organizes ideas and communicates orally.

### THINKING SKILLS—Thinks Creatively, Makes Decisions, Solves Problems, Visualizes and Knows How to Learn and Reason

- F-7 Creative Thinking—generates new ideas.
- F-8 Decision-Making—specifies goals and constraints, generates alternatives, considers risks, evaluates and chooses best alternative.
- F-9 Problem Solving—recognizes problems, devises and implements plan of action.
- F-10 Seeing Things in the Mind's Eye—organizes and processes symbols, pictures, graphs, objects, and other information.
- F-11 Knowing How to Learn—uses efficient learning techniques to acquire and apply new knowledge and skills.
- F-12 Reasoning—discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.

### PERSONAL QUALITIES—Displays Responsibility, Self-Esteem, Sociability, Self-Management, Integrity and Honesty

- F-13 Responsibility—exerts a high level of effort and perseveres towards goal attainment.
  - F-14 Self-Esteem—believes in own self-worth and maintains a positive view of self.
  - F-15 Sociability—demonstrates understanding, friendliness, adaptability, empathy and politeness in group settings.
  - F-16 Self-Management—assesses self accurately, sets personal goals, monitors progress and exhibits self-control.
  - F-17 Integrity/Honesty—chooses ethical courses of action.
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**NAEYC ASSOCIATE STANDARDS**  
**National Association for the Education of Young Children**  
**Standards for Early Childhood Professional Preparation**

**STANDARD 1. PROMOTING CHILD DEVELOPMENT AND LEARNING**

- 1a: Knowing and understanding young children's characteristics and needs, from birth through age 8.
- 1b: Knowing and understanding the multiple influences on early development and learning
- 1c: Using developmental knowledge to create healthy, respectful, supportive, and challenging learning environments for young children

**STANDARD 2. BUILDING FAMILY AND COMMUNITY RELATIONSHIPS**

- 2a: Knowing about and understanding diverse family and community characteristics
- 2b: Supporting and engaging families and communities through respectful, reciprocal relationships
- 2c: Involving families and communities in young children's development and learning

**STANDARD 3. OBSERVING, DOCUMENTING, AND ASSESSING TO SUPPORT YOUNG CHILDREN AND FAMILIES**

- 3a: Understanding the goals, benefits, and uses of assessment – including its use in development of appropriate goals, curriculum, and teaching strategies for young children
- 3b: Knowing about and using observation, documentation, and other appropriate assessment tools and approaches, including the use of technology in documentation, assessment and data collection.
- 3c: Understanding and practicing responsible assessment to promote positive outcomes for each child, including the use of assistive technology for children with disabilities.
- 3d: Knowing about assessment partnerships with families and with professional colleagues to build effective learning environments

**STANDARD 4. USING DEVELOPMENTALLY EFFECTIVE APPROACHES**

- 4a: Understanding positive relationships and supportive interactions as the foundation of their work with young children
- 4b: Knowing and understanding effective strategies and tools for early education, including appropriate uses of technology
- 4c: Using a broad repertoire of developmentally appropriate teaching /learning approaches
- 4d: Reflecting on own practice to promote positive outcomes for each child

**STANDARD 5. USING CONTENT KNOWLEDGE TO BUILD MEANINGFUL CURRICULUM**

- 5a: Understanding content knowledge and resources in academic disciplines: language and literacy; the arts – music, creative movement, dance, drama, visual arts; mathematics; science, physical activity, physical education, health and safety; and social studies.
- 5b: Knowing and using the central concepts, inquiry tools, and structures of content areas or academic disciplines
- 5c: Using own knowledge, appropriate early learning standards, and other resources to design, implement, and evaluate developmentally meaningful and challenging curriculum for each child.

**STANDARD 6. BECOMING A PROFESSIONAL**

- 6a: Identifying and involving oneself with the early childhood field
- 6b: Knowing about and upholding ethical standards and other early childhood professional guidelines
- 6c: Engaging in continuous, collaborative learning to inform practice; using technology effectively with young children, with peers, and as a professional resource.
- 6d: Integrating knowledgeable, reflective, and critical perspectives on early education
- 6e: Engaging in informed advocacy for young children and the early childhood profession

**STANDARD 7. EARLY CHILDHOOD FIELD EXPERIENCES**

- 7a. Opportunities to observe & practice in at least two of the three early childhood age groups (birth–3, 3-5, 5-8)
- 7b. Opportunities to observe and practice in at least two of the three main types of early education settings (early school grades, child care centers and homes, Head Start programs)

**NAEYC SUPPORTIVE SKILLS**

- Supportive Skill #1: Self-assessment and self-advocacy
- Supportive Skill #2: Mastering and applying foundational concepts from general education
- Supportive Skill #3: Written and verbal communication skills
- Supportive Skill #4: Making connections between prior knowledge/experience and new learning
- Supportive Skill #5: Identifying and using professional resources



- I have reviewed this syllabus and understand the requirements for this course.
- I am familiar with the SPC Student Guide and agree to follow the code of student conduct as described in the guide.

Signature \_\_\_\_\_ Date \_\_\_\_\_

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