

# DOMINICAN UNIVERSITY of CALIFORNIA

*School of Liberal Arts and Education*

## **Math Foundations in the Early Childhood Classroom**

**ECE 9587 3 Semester Credits/Units**

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### **Course Syllabus**

#### **Course Overview:**

Develop an in-depth understanding of the principles and topics for teaching mathematics in the early childhood classroom. Examine developmentally appropriate strategies for building the foundation for learning math. Construct a tool of meaningful standards-based activities. Create and implement differentiated math workstations that are aligned with curriculum and grade level standards and reflect on the outcome in the early childhood classroom.

#### **Course Learning Objectives:**

- Examine and identify the core principles of teaching mathematics in the early childhood classroom.
- Explore developmentally appropriate strategies for teaching mathematics.
- Design and produce rich math lessons and activities aligned to curriculum and grade level standards.
- Reflect on course learning how it will impact student achievement.

#### **Course Relation to CCS or other Professional Standards**

##### **The National Board for Professional Teaching Standard Early Childhood Generalist:**

- Standard I: Using Knowledge of Child Development to Understand the Whole Child
- Standard IV: Knowing Subject Matter for Teaching Young Children
- Standard V: Assessing Children's Development and Learning
- Standard VI: Managing the Environment for Development and Learning
- Standard VII: Planning for Development and Learning
- Standard VIII: Implementing Instruction for Development and Learning
- Standard IX: Reflect on Teaching Young Children

#### **How to Submit Coursework**

Each completed assignment in this course is submitted to the instructor for review. Follow directions at the end of each assignment on how to prepare and submit your assignments. Name each file submitted with your last name and assignment number (i.e. BrownAssignment3.) Make sure you place your full name, course number and assignment number at the top of each document page. You will receive feedback from your instructor within 5 days indicating successful completion of the assignment or the need for revision. Assignment grades will be averaged for the final course grade.

**Submit completed work to the corresponding Module dropboxes in Moodle**

## Optional Course Materials:

Math Work Stations: Independent Learning You Can Count On, K-2 by Debbie Diller

## Course Modules

Module 1: Developmentally Appropriate Strategies	
Objective	Identify the key characteristics for developmentally appropriate math instruction in the early childhood classroom. Reflect on your current math teaching practices.
Assignment(s) Activities and Needed Materials	<ul style="list-style-type: none"><li>● Read: <a href="#">The Playful Approach to Math</a></li><li>● Read: <a href="#">Math Play: How Young Children Approach Math</a></li><li>● Read: <a href="#">Concrete, Representational, Abstract</a></li><li>● Watch: <a href="#">I Do, We Do, You Do: Math</a></li><li>● Watch: <a href="#">Mathematic Instruction and Math Teaching Strategies</a></li></ul>
Assessment	Write a one-page reflection addressing the following questions: <ul style="list-style-type: none"><li>● What are the key take-aways that you have learned about developmentally appropriate math teaching strategies?</li><li>● What are some developmentally appropriate mathematics strategies that you currently employ in your teaching?</li><li>● How can you improve your math instruction with this knowledge in mind?</li><li>● What are some strategies that you are excited to try with your students?</li></ul> <b>Submit to the corresponding Module 1 dropbox in Moodle</b>

Module 2: Counting and Cardinality	
Objective	Identify the components of counting and cardinality in the early childhood classroom. Research activities and strategies for teaching counting and cardinality.
Assignment(s) Activities and Needed Materials	<ul style="list-style-type: none"><li>● Read: <a href="#">Counting Principles</a></li><li>● Explore: <a href="#">Counting and Cardinality Stations</a></li><li>● Research blogs, videos, etc to explore counting and cardinality activities and strategies</li></ul>
Assessment	Using <a href="#">this chart</a> , add at least 5 Counting and Cardinality activities and/or strategies you would like to implement into your classroom.

<b>Module 3: Number and Operations in Base Ten</b>	
<b>Objective</b>	Identify the components of Number and Operations in Base Ten in the early childhood classroom. Research activities and strategies for Number and Operations in Base Ten.
<b>Assignment(s) Activities and Needed Materials</b>	<ul style="list-style-type: none"> <li>Familiarize yourself with the Common Core Standards for Number and Operations in Base Ten for grades K-2: <a href="http://www.corestandards.org/Math/Practice/">http://www.corestandards.org/Math/Practice/</a></li> <li>Read: <a href="#">Decomposing Numbers</a></li> <li>Explore: <a href="#">Number Sense Routines Freebies</a></li> <li>Watch a 3-4 videos from <a href="#">Susan Jones Teaching Youtube Channel</a> on Number Sense Routines</li> <li>Research blogs, videos, etc. to explore Number and Operations in Base Ten activities and strategies</li> </ul>
<b>Assessment</b>	<u>Using your chart from the previous modules</u> , add at least 5 Number and/or Operations in Base Ten activities and strategies you would like to implement into your classroom.

<b>Module 4: Geometry</b>	
<b>Objective</b>	Identify the components of Geometry in the early childhood classroom. Research activities and strategies for Geometry.
<b>Assignment(s) Activities and Needed Materials</b>	<ul style="list-style-type: none"> <li>Familiarize yourself with the Common Core Standards for Operations and Algebraic Thinking for grades K-2: <a href="http://www.corestandards.org/Math/Practice/">http://www.corestandards.org/Math/Practice/</a></li> <li>Read: <a href="#">The Earliest Geometry</a></li> <li>Read: <a href="#">Geometric Thinking for Young Children</a></li> <li>Explore: <a href="#">Geometry and Shapes for Kids</a></li> <li>Research blogs, videos, etc. to explore geometry activities and strategies</li> </ul>
<b>Assessment</b>	<u>Using your chart from the previous modules</u> , add at least 5 Geometry activities and/or strategies you would like to implement into your classroom.

<b>Module 5: Operations and Algebraic Thinking</b>	
<b>Objective</b>	Identify the components of Operations and Algebraic Thinking in the early childhood classroom. Explore activities and strategies for teaching Operations and Algebraic Thinking.
<b>Assignment(s) Activities and Needed Materials</b>	<ul style="list-style-type: none"> <li>Familiarize yourself with the Common Core Standards for Operations and Algebraic Thinking for grades K-2: <a href="http://www.corestandards.org/Math/Practice/">http://www.corestandards.org/Math/Practice/</a></li> <li>Explore: <a href="#">Addition and Subtraction Activities for Kids</a></li> <li>Read: <a href="#">9 Ways to Promote Algebraic Thinking in the Early Grades</a></li> <li>Explore: <a href="#">7 Fun Activities for Teaching Word Problems</a></li> <li>Research blogs, videos, etc. to explore Operations and Algebraic activities and strategies</li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li><u>Using your chart from the previous modules</u>, add at least 5 Operations and Algebraic Thinking activities and/or strategies you would like to implement into your classroom.</li> </ul>

Module 6: Measurement and Data	
<b>Objective</b>	Identify the components of Measurement and Data in the early childhood classroom. Research activities and strategies for teaching Measurement and Data. Design a lesson on Measurement and Data.
<b>Assignment(s) Activities and Needed Materials</b>	<ul style="list-style-type: none"> <li>● Familiarize yourself with the Common Core Standards for Measurement and data for grades K-2: <a href="http://www.corestandards.org/Math/Practice/">http://www.corestandards.org/Math/Practice/</a></li> <li>● Explore: <a href="#">20 Clever Ideas for Teaching Measurement</a></li> <li>● Explore: <a href="#">12 Quick Tools To Teach Sorting in Kindergarten</a></li> <li>● Research blogs, videos, etc. to explore Measurement and Data activities and strategies</li> </ul>
<b>Assessment</b>	<u>Using your chart from the previous modules</u> , add at least 5 Measurement and Data activities and/or strategies you would like to implement into your classroom.

Module 7: Math Workshop and Culminating Activity	
<b>Objective</b>	Research, design, and produce rich math work stations aligned to curriculum and grade level standards.
<b>Assignment(s) Activities and Needed Materials</b>	<ul style="list-style-type: none"> <li>● Explore <a href="#">Math Work Stations: Independent Learning You Can Count On</a>, K-2 by Debbie Diller (<b>optional</b>)</li> <li>● Read: <a href="#">How To Use Work Stations in the Math Classroom</a></li> <li>● Watch: <a href="#">Starting the Year with Math Stations</a></li> <li>● <u>Using your chart from the previous modules</u>, create math work stations aligned to curriculum and grade level standards.</li> <li>● Log 10 hours in <a href="#">this template</a>.</li> <li>● Create a presentation demonstrating evidence of your work, including pictures of the math work stations.</li> </ul>
<b>Assessment</b>	<ul style="list-style-type: none"> <li>● Submit your presentation and log of hours.</li> <li>● Write a 1-page reflection about your learning from the course answering the following questions: <ul style="list-style-type: none"> <li>● As a result of this course, what were some of your most powerful learning moments and what made them so?</li> <li>● Explain how you will introduce the work stations and activities to your students and how you plan to implement the stations in your learning environment.</li> <li>● Summarize how your work will directly impact student achievement.</li> <li>● Be sure to cite sources both in text and APA.</li> </ul> </li> </ul> <p><b>Submit to the corresponding Module 7 dropbox in Moodle</b></p>

**Course Assessment Rubric:**

<p align="center"><b>EXCELLENT</b></p> <p>Meets or Exceeds Course Objectives: <b>A to A-</b></p>	<p align="center"><b>ACCEPTABLE</b></p> <p>Majority of work meets course objectives: <b>B+ to B-</b></p>	<p align="center"><b>NOT ACCEPTABLE</b></p> <p>Needs Considerable Improvement: Resubmit Work Suggested: <b>C or below</b></p>
<p>All work submitted reflects in-depth understanding of course objectives.</p>	<p>Most work submitted reflects in-depth understanding of course objectives.</p>	<p>Work shows little or no in-depth understanding of course objectives.</p>
<p>Assignment responses show evidence of new knowledge evidenced by thoughtful, detailed and accurate assignment responses.</p>	<p>Most assignment responses show evidence of new knowledge evidenced by thoughtful, detailed and accurate assignment responses.</p>	<p>Responses show little to no evidence of new knowledge as evidenced by lack of thoughtful, detailed and accurate assignment responses.</p>
<p>Work submitted was organized and clearly articulated. The student carefully followed all assignment instructions. The instructor did not have to provide continual assignment clarification or request revisions.</p>	<p>Most work submitted was organized and clearly articulated. The student carefully followed all assignment instructions. The instructor had to provide continual assignment clarification or ask for revisions.</p>	<p>Work submitted was not organized or not clearly articulated. The instructor had to provide constant clarification and ask for continued revisions.</p>
<p>Assignment content and required projects were original.</p>	<p>Assignment content and required projects were original.</p>	<p>Evidence that not all assignment content and required projects were original.</p>
<p>Work is free of spelling and/or grammatical errors.</p>	<p>Work has few spelling and/or grammatical errors.</p>	<p>Work has numerous spelling and/or grammatical errors.</p>