ON-DEMAND COURSE

# UDL IN MATHEMATICS INSTRUCTION K-5

**30 continuing education hours**

## Overview

Have you ever heard a scholar say, "*I'm bad at math*," or have you ever felt that way yourself? How would you like to be the person who changes that narrative and makes math accessible to all scholars you work with?

This self-paced course is designed to support elementary math educators in designing universally designed instruction in their classrooms. This course will provide strategies, resources, and practical tools aligned with the principles of Universal Design for Learning (UDL) to foster confident and capable young mathematicians.

Throughout these modules, you'll reflect on your own teaching practices, uncover barriers that may be holding scholars back, and explore strategies to help all learners **thrive in mathematics**!

## Course Objectives & Learning Outcomes

By the end of this course, participants will be able to:

- Identify barriers to learning in mathematics and explore strategies to create accessible and engaging math experiences for all scholars.
- Develop UDL-aligned lessons integrating multiple means of representation, engagement, and expression.
- Develop multiple means of expression for scholars to demonstrate their understanding.
- Reflect on current teaching practices and identify opportunities for incorporating culturally relevant strategies into daily instruction.

## COURSE INSTRUCTOR

### Dr. Angela Burke

Education Consultant

Dr. Burke has over twenty years of experience as an educator, working in various school structures, including charter, inter-district magnet, pilot, public, and charter management organizations. Her classroom experience spans from K-6th Grade. She has served in various leadership roles in and out of the classroom. Her most recent experiences have been as Assistant Superintendent/Chief Academic Officer and Director of Curriculum, Instruction, Assessment, and Technology. She is level 1 & 2 certified in UDL and holds certifications in both DEI and Digital Leadership from Cornell University.

## REQUIRED TEXT

*Universal Design for Learning in Mathematics Instruction K-5* by Katie Novak, EdD and Ashley Marlow.

Group pricing is available, email Orders@PSSC.com

All other readings, videos, and tools will be provided in the course platform.

Novak EDUCATION

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## COURSE SYLLABUS

## COURSE OUTLINE

Review the course outline below. Within each lesson, you will complete the following activities:

- Begin by watching, reading and/or listening to the video lessons.
- Dive deeper into the content. Review readings, videos, and resources - the key is to self-differentiate. Choose what works best for you and helps you better understand the content and engage with the lesson.
- Try it out: Put your learning into action.
- Reflect on your learning.
- Check for understanding: complete a, low-stakes quiz to reinforce key concepts from this lesson.

### 1 Module One
### Moving Beyond Mimicry

#### Lessons

- Lesson 1: Breaking the One-Size-Fits-All Model
- Lesson 2: Opening Doors to Mathematical Thinking
- Lesson 3: A UDL Math Classroom

#### Objectives

- Identify characteristics of traditional math instruction and examine how it can limit scholars' access and engagement.
- Analyze how UDL's principles of engagement, representation, and action/expression can transform math classrooms into inclusive learning spaces.
- Reflect on personal teaching practices and begin envisioning shifts away from traditional models toward universally designed instruction.

#### Essential Question

- How can shifting away from traditional, one-size-fits-all math instruction toward a UDL approach create more equitable and empowering experiences for all scholars?

### 2 Module Two
### Designing for Discovery

#### Lessons

- Lesson 1: More Than the Curriculum
- Lesson 2: Flexible Pathways with Blended Learning
- Lesson 3: Fueling Deeper Thinking in Math

#### Objectives

- Develop strategies to connect math instruction to real-world, culturally relevant experiences that elevate interest and access.
- Apply frameworks like Webb's DOK and blended learning to design math tasks that encourage deeper thinking and foster nurturing classroom environments.

#### Essential Question

- How can we move beyond scripted instruction to create math classrooms where scholars develop original ideas, deep understanding, and a true sense of belonging?

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COURSE SYLLABUS

## 3 Module Three
## Growing Positive Mathematical Mindsets

### Lessons

- Lesson 1: Beliefs: Breaking the Math Myth
- Lesson 2: Skill Sets: Improving Teacher Self-Efficacy

### Objectives

- Reflect on personal beliefs and experiences with mathematics and examine how they influence current instructional practices.
- Understand the interconnected roles of belief systems, system drivers, and skill sets in creating humanizing, inclusive math classrooms.
- Apply strategies such as presuming competence to foster positive mathematical mindsets and equitable learning environments.

### Essential Question

- How can nurturing the right beliefs, systems, and skills- in both scholars and ourselves- transform math classrooms into spaces where everyone can grow as confident mathematicians?

## 4 Module Four
## Cultivating Early Numeracy

### Lessons

- Lesson 1: What Early Numeracy Really Means
- Lesson 2: Best Practices for Building Early Numeracy

### Objectives

- Identify and explain key early numeracy skills and their role in developing a strong mathematical foundation.
- Design interdisciplinary, inclusive math experiences that promote sense-making and conceptual understanding using multiple means of representation and action.
- Reflect on the inclusivity and variability of materials, tools, and collaboration structures used in your classroom to foster greater engagement and success.

### Essential Question

- How can intentionally cultivating early numeracy skills, using inclusive, sense-making practices, build a strong foundation for lifelong mathematical success?

## 5 Module Five
## Unlocking Access to Additive Reasoning

### Lessons

- Lesson 1: From Facts to Understanding
- Lesson 2: Making Additive Thinking Stick

### Objectives

- Explain the key components of additive reasoning and why they are foundational for long-term mathematical success.
- Design and deliver instruction that fosters sense-making through manipulatives, visual aids, real-world connections, and flexible blended learning structures.
- Reflect on your current practices and identify concrete strategies to increase scholar voice, choice, critical thinking, and real-world application in your math classroom.

### Essential Question

- What makes additive reasoning a critical foundation for mathematical success, and how can we teach it in ways that foster understanding, agency, and relevance?

## 6 Module Six
## Multiply Meaningfully

### Lessons
- Lesson 1: Fast isn't Always Fluent
- Lesson 2: Foundations of Multiplication and Division
- Lesson 3: Structuring Conceptual Fluency

### Objectives
- Explain the limitations of timed tests and the importance of sense-making in developing multiplication and division fluency.
- Deepen understanding of the conceptual foundations of multiplication and division using terms like unitizing, composition, and decomposition.
- Design and assess learning experiences that prioritize mathematical understanding, reduce anxiety, and make space for equitable participation.

### Essential Question
- How can we foster meaningful multiplication and division understanding while removing the pressure and inequity that come with traditional fluency practices?

## 7 Module Seven
## Making Fractions Make Sense

### Lessons
- Lesson 1: Why Fractions Matter
- Lesson 2: Bringing Fractions to Life
- Lesson 3: Fractions without Fear

### Objectives
- Reflect on and unlearn common misconceptions about fractions that stem from rote or procedural teaching methods.
- Use key fraction concepts like equipartitioning, equivalence, and iteration to build conceptual understanding in your instruction.
- Design lessons that embed fractions in meaningful, real-life contexts to support deeper understanding and a more positive math identity.

### Essential Question
- How can we move beyond tricks and procedures to help scholars, and ourselves, understand, visualize, and connect with fractions in meaningful ways?