CE Credits Online™

Course Syllabus

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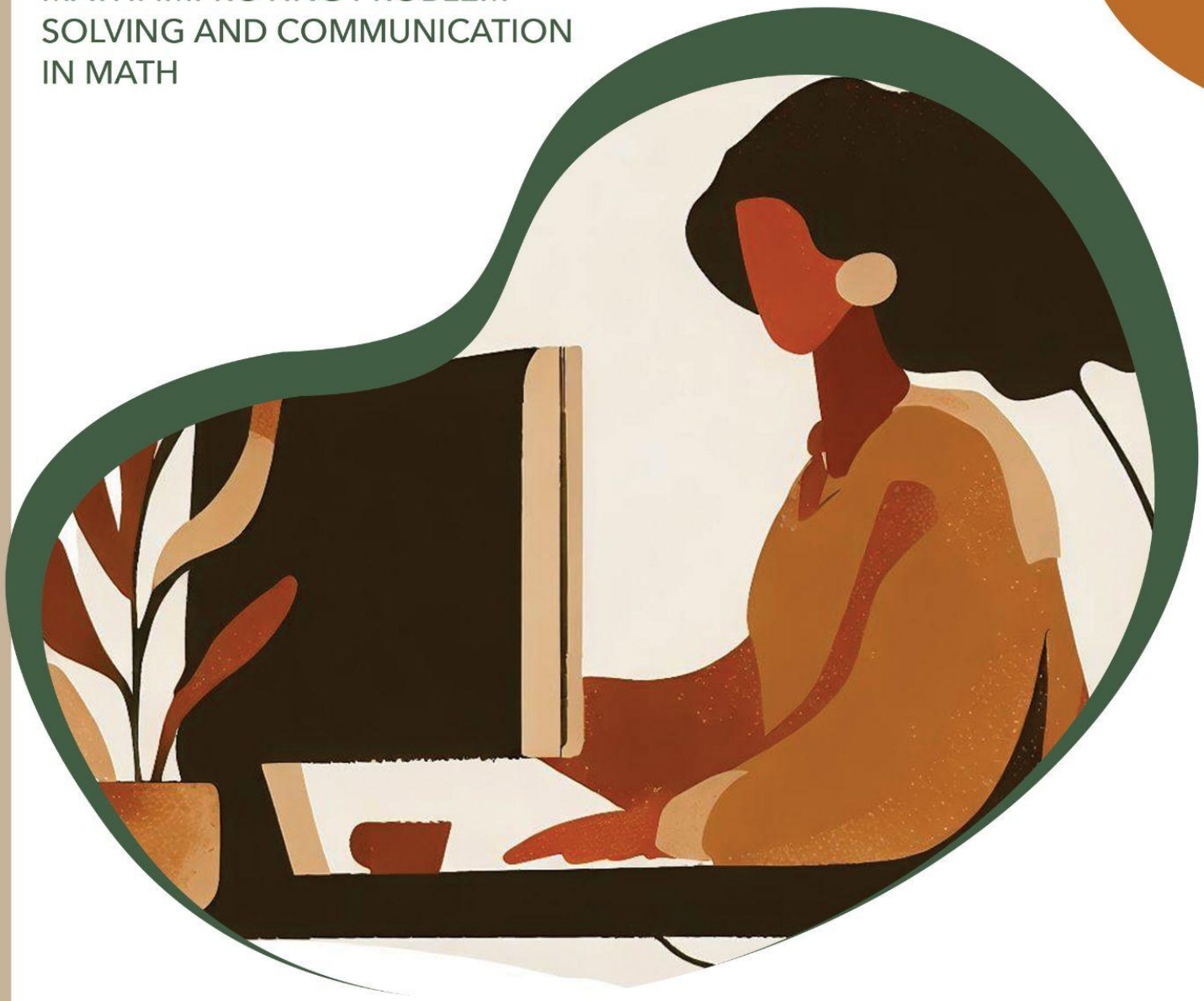
LEARNING THE LANGUAGE OF MATH: IMPROVING PROBLEM SOLVING AND COMMUNICATION IN MATH



Learning the Language of Math: Improving Problem Solving and Communication in Math
45 Hours or 3 Graduate Credits

Course Access: Upon enrollment, you have 180 days to complete your online course in our eClassroom. If you have any questions about course access, please email support@cecreditsonline.org, or call 425-788-7275 extension 104.

Course Description
This course equips teacher learners with the knowledge and tools necessary to ensure that all students are empowered to become proficient problem solvers and communicators of mathematics. This goal is pursued through a language-centered approach that highlights the essential role of communication in developing students' capacities for comprehension, critical thinking, and clear exposition of mathematical ideas. Emphasis is placed on leveraging students' community-based knowledge and honoring the multitude of preferred modes of learning and self-expression.

Objectives
As a result of this course, participants will:

- Explain the important role of problem solving and mathematical literacy in preparing students to navigate an increasingly technical and data-driven society
- Engage and empower students to become critical participants in society by showing them how math can be used to investigate realistic and relatable sociocultural issues
- Mitigate against the deleterious effects of math anxiety and negative math attitudes by cultivating a psychologically safe and multiculturally affirming classroom environment
- Teach and model a structured, yet flexible approach to problem solving that is characterized by productive struggle and a tolerance for ambiguity
- Utilize a variety of strategies and downloadable resources to provide students regular opportunities to speak, write, and otherwise communicate their mathematical thinking
- Conduct meaningful multimodal assessment that honors the multitude of preferred learning styles and modes of expression without sacrificing mathematical rigor

Alignment to the Charlotte Danielson Framework for Teaching

Domain 1: Planning and Preparation

- 1b Demonstrating Knowledge of Students
- 1e Designing Coherent Instruction

Domain 2: Classroom Environment

- 2a Creating an Environment of Respect and Rapport

- 2b Establishing a Culture for Learning

Domain 3: Instruction

- 3a Communicating with Students
- 3b: Using Questioning and Discussion Techniques
- 3c: Engaging Students in Learning
- 3d Using Assessment in Learning

Domain 4: Professional Responsibilities

- 4a Reflecting on Teaching
- 4d Growing and Developing Professionally

Course Components

This course consists of interactive presentations, videos, readings, discussion boards, authentic tasks, and a final project. All elements of the course must be completed in order to obtain a letter of completion and/or credits.

Course Outline

Module 1: Making the Case

- Course Introduction
  - Discussion Board: Introduction and Motivation
- Final Project Document
- Setting Priorities
- Aligning with Standards
- Getting Emotional
  - Discussion Board: Mathitude Reflection

Module 2: Managing Mathitudes

- Creating Safety
  - Discussion Board: Warm Demander
- Combating Anxiety
- Promoting Inquiry
  - Discussion Board: Achievement Orientation

Module 3: Approaching Problems

- Following Polya's Steps
- Reading for Understanding
  - Discussion Board: Attending to Precision
- Looking for Deep Structures

- Discussion Board: Recognizing Deep Structure

Module 4: Selecting Strategies

- Building a Toolkit
  - Discussion Board: Modeling Heuristics
- Gaining Experience
- Embracing Struggle
  - Discussion Board: Practicing What You Preach

Module 5: Fostering Communication

- Setting the Stage
- Talking in Math
  - Discussion Board: Real Talk for the Real World
- **Authentic Task #1:** Mathematically Speaking
- Writing in Math
  - Discussion Board: To Write or Not to Write
- **Authentic Task #2:** Dear Math Journal

Module 6: Measuring Progress

- Clarifying Goals
  - Discussion Board: Assessment Beliefs
- Providing Feedback
- Bringing the Vision to Life
  - Discussion Board: Final Thoughts and Takeaways

Final Project

Grading Policy

Course Component	**Percentage of Final Grade**
Authentic Tasks (2)	40%
Discussion Boards (12)	25%
Final Project	35%

You must have an 80% average in order to pass and obtain University credit for this course unless your district has specified otherwise.

Compliance with and Commitment to the American Disabilities Act

In compliance with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act, participants who have any condition, either permanent or temporary, which might affect

their ability to complete this course, are encouraged to reach out to support@cecreditsonline.org at the beginning of the course. We will make reasonable academic and accessibility accommodations to the course.

Academic Integrity Policy

Honesty is an essential aspect of academic integrity. Individual students are responsible for doing their own work and submitting original assignments as per the course directions. Individual students are responsible for doing their own work. Plagiarism and cheating of any kind will not be tolerated. This includes using information from the Internet without citing the website. Avoid plagiarism by appropriately acknowledging the source of the author's words and ideas.