This course supports the assessment for DUP1. The course covers 9 competencies and represents 1 competency unit.

Introduction

Overview
Watch the following welcome video for an introduction to this course:

*Note: To download this video, right-click the following link and choose "Save as...":* download video.

Teaching Dispositions Statement
Please review the Statement of Teaching Dispositions.

Course Instructor Assistance

Feel free to schedule time directly with a course instructor via this link: Contact a Math and Science Course Instructor

Email: mathsciencemethod@wgu.edu

As you prepare to demonstrate competency in this subject, remember that course instructors stand ready to help you reach your educational goals. As subject matter experts, mentors enjoy and take pride in helping students become reflective learners, problem solvers, and critical thinkers. Course instructors are excited to hear from you and eager to work with you.

Successful students report that working with a course instructor is the key to their success. Course instructors are able to share tips on approaches, tools, and skills that can help you apply the content you’re studying. They also provide guidance in assessment preparation strategies and troubleshoot areas of deficiency. Even if things don't work out on your first try, course instructors act as a support system to guide you through the revision process. You should expect to work with course instructors for the duration of your coursework, so you are welcome to contact them as soon as you begin. Course instructors are fully committed to your success!

Preparing for Success

The information in this section is provided to detail the resources available for you to use as you complete this course.

Competencies & Objectives

This course provides guidance to help you demonstrate the following 9 competencies:

- **Competency 670.1.1: Differentiated Mathematics Instruction**
  The graduate plans differentiated instruction in mathematics education to support the unique needs of diverse learners.
Modify a mathematics lesson to meet the needs of a given student using a given instructional strategy.

Analyze a mathematics lesson for how well it addresses the needs of all students.

Create a mathematics lesson that is accessible to all students.

Identify strategies for planning mathematics lessons for all learners.

Compare common strategies for planning mathematics lessons for all learners.

Explain what it means to teach for all students.

Describe specific difficulties of learning for diverse groups.

Select instructional strategies that provide equitable learning opportunities for diverse learners.

Analyze the diverse needs of a given group of mathematics students.

- **Competency 670.1.2: Mathematical Communication**
  The graduate integrates effective mathematical communication strategies into the development of mathematics education for elementary schools.
  - Identify instructional strategies that can be used to facilitate effective class or small group discussions about mathematics.
  - Identify instructional strategies that can be used to create a classroom environment that encourages mathematical communication.
  - Facilitate the explanation of student mathematical thinking to other students and teachers.
  - Select questioning techniques that elicit student mathematical thinking.
  - Select instructional strategies that encourage students to clearly communicate their mathematical thinking to their peers and teachers.
  - Decide which instructional strategies encourage the use of precise academic language in mathematics by students.

- **Competency 670.1.3: Mathematical Tools**
  The graduate integrates tools that enhance student mathematics learning.
  - Identify a variety of tools that can be used in mathematics instruction.
  - Explain uses of specific tools in mathematics instruction.
  - Integrate instructional tools into mathematics instruction.
  - Select appropriate concrete materials for learning mathematics.
  - Determine the appropriateness of a concrete or technological tool for learning a specific mathematical concept.

- **Competency 670.1.4: Assessment**
  The graduate evaluates student learning to measure elementary students' mathematical achievement and to plan further instruction.
  - Explain the steps to incorporate observational assessments into a lesson.
  - Explain the importance of listening to evaluate a student's conceptual understanding of mathematics.
  - Explain how to use a rubric to analyze student performance.
  - Use a rubric to determine the level of student performance.
  - Analyze the connection between assessment and instruction in a given mathematics lesson.
  - Analyze the mathematical thinking of students.
  - Analyze the effectiveness of a performance assessment for assessing key
mathematics concepts.
- Analyze the mathematical thinking of students to determine further instruction.

**Competency 670.1.5: Interdisciplinary Learning Experiences as Context for Math Instruction**
The graduate creates interdisciplinary learning experiences as contexts for mathematical instruction.
- Identify mathematical connections to contexts outside mathematics curriculum.
- Identify mathematical connections within mathematics curriculum.
- Explain how contextualizing mathematical instruction makes mathematics more accessible to learners.
- Select a context outside mathematics curriculum that can be used to teach a specific mathematical concept.

**Competency 670.1.6: Instructional Strategies**
The graduate recommends various instructional strategies that encourage students' development of critical thinking, problem solving, and performance skills in mathematics.
- Identify common mathematical learning theories.
- Identify aspects of understanding mathematics.
- Identify important characteristics of the process of mathematics.
- Identify strategies of teaching for understanding in mathematics.
- Differentiate between knowing and understanding mathematics.
- Differentiate between various models that represent mathematical ideas.
- Translate given mathematical ideas between models.

**Competency 670.1.7: Mathematical Learning Research**
The graduate applies mathematical learning research as a foundation for instruction.
- Identify students' common misconceptions and errors in algebraic thinking.
- Identify students' correct mathematical conceptions about algebra from which further mathematical learning can be built.
- Identify students' common misconceptions and errors in geometry and measurement.
- Identify students' correct mathematical conceptions about geometry and measurement from which further mathematical learning can be built.
- Identify students' common misconceptions and errors in number sense and performing operations.
- Identify students' correct mathematical conceptions about probability and statistics.
- Identify students' correct mathematical conceptions about probability and statistics from which further mathematical learning can be built.

**Competency 670.1.8: National, State, and Local Mathematics Standards**
The graduate integrates national, state, and local mathematics standards, learning outcomes, benchmarks, and objectives in the development of mathematics education for elementary students.
- Identify important standards documents for mathematics instructions.
- Select applicable standards for a given mathematics curriculum.
- Analyze a mathematics learning activity to determine its alignment with standards and best practices.
- Evaluate a mathematics learning activity for its overall quality and alignment with standards.
Competency 670.1.9: Mathematical Representation
The graduate applies models and representations to support and enhance the interpretation, organization, recording, and communication of mathematics.
  - Identify the uses of representations in mathematical instruction.
  - Implement a representation to record and organize mathematical thinking.
  - Apply a representation to quantifiable phenomenon to model and communicate information about that phenomenon.
  - Select instructional strategies that encourage students to create their own representations of their mathematical thinking.

Learning Resources
The learning resources listed in this section are required to complete the activities in this course. For many resources, WGU has provided automatic access through the course. However, you may need to manually enroll in or independently acquire other resources. Read the full instructions provided to ensure that you have access to all of your resources in a timely manner.

In the following resources, you may read about No Child Left Behind (NCLB). Please be aware that as of December 2015, President Barack Obama replaced NCLB with the Every Student Succeeds Act (ESSA). This new act reauthorizes the 50-year-old Elementary and Secondary Education Act (ESEA), the nation’s national education law and longstanding commitment to equal opportunity for all students. Although not required for this course, you are encouraged to familiarize yourself with the new act. For additional information, please visit the following links from the U.S. Government and the U.S. Department of Education:

  - Webinar recording
  - Read the ESEA now referred to as the ESSA
  - Fact sheet on ESSA
  - Transition Letter

Automatically Enrolled Learning Resources
You will be automatically enrolled at the activity level for the following learning resources. Simply click on the links provided in the activities to access the learning materials.

VitalSource E-Texts
The following textbook is available to you as an e-text within this course. You will be directly linked to the specific readings required within the activities that follow.


Note: This e-text is available to you as part of your program tuition and fees, but you may purchase a hard copy at your own expense through a retailer of your choice. If you choose to do so, please use the ISBN listed to ensure that you receive the correct edition.

Teachscape
Teachscape contains additional video resources and instructional materials for this course. You will find video links throughout the study plan. Please ensure that you have enabled your internet browser to allow pop-ups through Teachscape.

**Other Learning Resources**

You will use the following learning resources for this course.

**WGU Library E-Reserves**

This course utilizes resources located in the WGU Library E-Reserves, with articles available for you to download. For instructions on how to access WGU Library E-Reserves, see the "[Accessing WGU Library E-Reserves](#)" page.

The following e-reserve materials will be used in this course:


Listed below is the e-reserves page for this course:

- [Elementary Mathematics Methods](#)

**Additional Preparations**

**Setting Up Your Learning Journal**

Throughout this course, you will be presented with questions and prompts that will help you engage deeply in the content. Please set up a journal system to record notes and reflections.

**Pacing Guide**

The pacing guide suggests a weekly structure to pace your completion of learning activities. It is provided as a suggestion and does not represent a mandatory schedule. Follow the pacing guide carefully to complete the course in the suggested timeframe.

**Week 1**

- Introduction
- National, State, and Local Mathematics Standards
- Mathematical Communication

**Week 2**

- Instructional Strategies
- Differentiated Mathematics Instruction

**Week 3**

- Assessment
• Mathematical Tools

Week 4

• Interdisciplinary Learning Experiences as Context for Math Instruction

Week 5

• Mathematical Learning Research

Week 6

• Mathematical Representation
• Project in Elementary Mathematics Methods

Note: This pacing guide does not replace the course. Please continue to refer to the course for a comprehensive list of the resources and activities.

Project in Elementary Mathematics Methods

All the work you previously completed in preparation for the Elementary Mathematics Methods objective assessment is relevant for completing the performance assessment for this course.

Lesson Planning Resources

Use the following resources to guide you in preparation for your performance assessment.

A Guide to the WGU Lesson Plan Template

You can access examples of completed lesson plans here:

- Lesson Plan Sample 1- Direct Instruction Style
- Lesson Plan Sample 2 - Modified for Inquiry Style

If you have questions about any of the sections included on the WGU Lesson Plan Template, review the following recordings or e-mail the course instructor for your current course of study.

Overview:

- Lesson Planning Guidelines (8:26)

General Information:

- Lesson Title & Subject (1:38)
- Topic or Unit of Study (1:38)
- Grade/Level (1:38)
- Instructional Setting (1:38)
Standards and Objectives:

- Curriculum Standard (3:36)
- Lesson Objective (4:07)

Materials and Resources:

- Instructional Materials
- Resources

Instructional Plan:

- Prerequisite Skills
- Presentation of New Information and/or Modeling (3:16)
- Guided Practice (1:16)
- Independent Practice (1:23)
- Culminating or Closing Procedure/Activity/Event (1:47)
- Instructional Strategy (or Strategies) (1:46)
- Differentiated Instruction Accommodations (2:56)
- Use of Technology
- Student Assessment/Rubrics (3:07)

Virtual Manipulatives:

Visit the following websites for ideas on how to use virtual manipulatives in your mathematics lessons:

- National Library of Virtual Manipulatives
- Virtual Math Manipulatives

Complete: Elementary Mathematics Methods Performance Assessment

Complete the following performance assessment in Taskstream:

- Elementary Mathematics Methods: DUP Task 1

Watch: Elementary Math: Lesson Plans with Manipulatives (14:00)

Note: To download this video, right-click the following link and choose “Save as...”: download video.

Final Steps

Congratulations on completing the activities in this course! This course has prepared you to complete the assessments associated with this course. If you have not already been directed to complete the assessments, schedule and complete your assessments now.