This course supports a performance assessment. It covers 4 competencies.

Introduction

Introduction

Overview

This course covers plane geometric and three-dimensional reasoning; geometry, measurement, theory of probability, and statistical inference, including the fundamental counting principle and its relationship to sampling. This course also teaches participants how to analyze common student errors and misunderstandings, and how to determine prerequisite skills necessary for students to complete given activities involving geometry and measurement, probability, statistics and the evaluation of predictions.

Getting Started

Welcome to Geometry and Statistics! All activities for this course are embedded within two learning resources: a VitalSource electronic textbook, and videos in *Mathematics, Yes!*. You should go through the course in the order written to prepare for each of the three tasks. It is highly recommended that you open the portfolio response sheet that is located within the Assessments tab when you begin the course. Fill it out as you work through the course content.

As a teacher, you must be an agent for removing students' fears, dislike, and lack of confidence about learning mathematics. If you have been in the classroom already, you will find ways to expand your creativity and enhance your effectiveness as a teacher. Do all you can to absorb everything in your WGU mathematics education program. Teaching is all about learning.

Teaching Dispositions Statement

Please review the Statement of Teaching Dispositions.

Preparing for Success

The information in this section is provided to help you become ready to complete this course of study. As you proceed, you will need to be organized in your studies in order to gain competency in the indicated areas and prepare yourself to pass the final assessments.

Learning Resources

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. Department of Education:

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

Electronic Textbook

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.

Van de Walle, J. A., Karp K. S., & Bay-Williams, J. M. (2009). *Elementary and middle school mathematics: Teaching developmentally* (8th ed.). Boston, MA: Allyn & Bacon. ISBN-13: 978-1256957669

Note that the text references MyEducationLab, but it is not necessary.

Mathematics, YES!

Mathematics, YES! is the primary learning resource for this course and guides the creation of your tasks.

As you work through the activities in Mathematics, Yes!, put yourself in the mindset of a student encountering these concepts for the first time. Consider the following questions:

- What might be confusing?
- What can you, as the teacher, do to make the topics more understandable?
- What prior experiences can you share?
- What hands-on manipulatives can you use to illustrate the concepts?

As you watch the teachers in the videos throughout Mathematics, Yes!, think about which strategies you see working.

- What would you do differently?
- Which games or activities might you modify?
- Are there any educational technologies that might be useful to include in your teaching strategies?

All your lesson plans should be written at a graduate level, including complete sentences and proper spelling and grammar. Be sure to check your spelling and proofread your responses throughout all response sections. Portfolio response sheets and all of your responses will be submitted for grading.

Supplemental Materials

There might be times when you feel like you need more information or practice than what has been provided in the course. In addition to consulting with your Course Instructor when you

need help, you can access optional and supplemental activities by using the word "supplemental" in the Course Search box. These activities can be enriching, but they are not essential for becoming competent.

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 and 2:

- Geometry and Measurement of Plane Figures
- Task 1

Week 3 and 4:

- Geometry and Measurement of Solid Figures
- Task 2

Week 5 and 6:

- Statistics, Data Analysis, and Probability
- Task 3

Contact a Course Instructor

Your Course Instructor is an important resource for you to take advantage of as you progress through your study of Geometry and Statistics. Your Course Instructor will be able to help guide your learning, answer questions, and provide valuable information. Be sure to consult your Course Instructor frequently.

Competencies:

This course covers the following competencies.

- **Competency 201.8.1: Geometry and Measurement Knowledge**
  The graduate demonstrates plane geometric and three-dimensional reasoning, concepts and principles and locates, develops and solves real world problems using important geometric and measurement principles.
- **Competency 201.8.2: Geometry and Measurement Instructional Strategies**
  The graduate analyzes, critiques, modifies, develops and evaluates lessons and instructional strategies involving geometry and measurement, analyzes common student errors and misunderstandings, and determines necessary prerequisite skills required for students to complete given activities involving geometry and measurement.
- **Competency 201.9.1: Statistics and Probability Knowledge**
  The graduate describes the theory of probability, including the fundamental counting principle, and its relationship to sampling, statistical inference, and how to make and evaluate predictions.

- **Competency 201.9.2: Statistics and Probability Instructional Strategies**
  The graduate analyzes critiques, modifies, develops and evaluates lessons and instructional strategies involving probability and statistics, analyzes common student errors and misunderstandings, and determines necessary prerequisite skills required for students to complete given activities involving probability, statistics and the evaluation of predictions.

Geometry and Measurement of Plane Figures

In this unit, you will learn key concepts about geometry and measurement of plane figures and how to teach them effectively.

Geometry and Measurement of Plane Figures

Students frequently enjoy the content area of geometry and measurement because of the hands-on, tangible nature of the material. This unit will provide opportunities for you to build curriculum to engage in multiple learning styles.

Learning Activities for Geometry and Measurement of Plane Figures

View the following video:

- "Geometry and Measurement of Plane Figures: Overview"

View the following video:

- "Geometry and Measurement of Plane Figures: A Lesson on Shapes"

View the following classroom videos:

- Video 23 ("Windows, Dinos, and Ants")
- Video 20 ("Shapes from Squares")

View the following video:

- "Geometry and Measurement of Plane Figures: Shape and Shape Attributes"

Look through the resources available through the following website:

- Illuminations: Web Links – Geometry

Performance Assessment

Complete and submit Task 1: "Geometry and Measurement of Solid Figures" portfolio response sheet. This performance assessment is located in Taskstream and can be accessed from the Assessment tab.

If you do not pass, contact your Course Instructor.

Geometry and Measurement of Solid Figures

In this unit, you will learn key mathematics concepts related to geometry and measurement of solid figures, and how to teach these concepts effectively.

Geometry and Measurement of Solid Figures

Building on a foundation of plane geometry, students can expand the study of shapes and measurement to include three-dimensional objects.

Learning Activities for Geometry and Measurement of Solid Figures Part 1

View the following video:

- "Geometry and Measurement of Solid Figures: Overview"

View the following video:

- "Geometry and Measurement of Solid Figures: A Lesson on Volume and Surface Area"

Look through the resources available through the following website:

- "Shape and Space in Geometry"

Learning Activities for Geometry and Measurement of Solid Figures Part 2

View the following classroom video:

- Video 25 ("Balloon Travel")

View the following video:

- "Geometry and Measurement of Solid Figures: Volume of Non-Rectangular Solids."

Performance Assessment

Complete and submit Task 2: "Geometry and Measurement of Solid Figures" portfolio response sheet. This performance assessment is located in Taskstream and can be accessed from the Assessment tab.

If you do not pass, contact your Course Instructor.

Statistics, Data Analysis, and Probability

In this unit, you will learn key mathematics concepts related to statistics, data analysis, and probability, and how to teach those concepts effectively.

Statistics, Data Analysis, and Probability, Part 1

The notion of chance is a new concept for most children. However, beginning concepts in

probability, statistics, and data analysis are within the grasp of even the youngest students.
Learning Activities for Statistics, Data Analysis, and Probability, Part 1

Read the following chapters in Elementary and Middle School Mathematics: Teaching Developmentally:

- Chapters 21– 22

View the following video:

- "Statistics, Data Analysis, and Probability: Overview"

View the following video:

- "Data Analysis, Statistics, and Probability: A Lesson on Probability"

Look through the resources available through the following website: *National Library of Virtual Manipulatives*.
Learning Activities for Statistics, Data Analysis, and Probability, Part 2

View the following classroom videos:

- Video 28 ("Ladybugs")
- Video 31 ("Dice Toss")

View the following video:

- "Data Analysis, Statistics, and Probability: A Lesson on Probability, Continued"

Performance Assessment

Complete and submit Task 3: "Statistics, Data Analysis, and Probability" portfolio response sheet. This performance assessment is located in Taskstream and can be accessed from the Assessment tab.

If you do not pass, contact your Course Instructor.

Final Steps

Congratulations on completing the activities in this course! If you have not already completed the assessments, schedule and complete your assessments now.