### MODIFIED UBD LESSON PLAN

## STEM 101

# COURSE: Introduction to Engineering UNIT: Measurement 2.0 EXERCISE: Money Measurement Activity TIME FRAME: 1 Hour Image: PREPARATION: Summary of "to do's" that the teacher should understand and prepare before bringing this lesson to the classroom. Image: Prepare teacher should understand and prepare before bringing this lesson to the classroom.

Teachers will need to ensure that the proper supplies are available for students to build their solutions.

#### Tools:

- Ruler
- Dial Caliper
- Digital Caliper

#### Additional Resources:

- Pennies, Nickels, Dimes and Quarters
- Internet
- Spreadsheet
- Engineering Notebook

#### Information

Before starting this exercise, students should have an understanding of:

✓ Presentation: Measurement



SAFETY: Summary of safety strategies in the lesson.

There are no safety exercises for this exercise.





LINIT: Measurement 2.0		EVERCISE: Manay Managurament Activity		TIME EDAME: 1 Hour
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2 EVIDENCE:				
EVALUATIVE CRITERIA:		ASSESSMENT EVIDENCE:		
<ul><li>Completed</li><li>Correct test answers</li></ul>	Performan Digital Cali Students wil	<ul> <li><i>Performance Task(s):</i></li> <li><u>Digital Caliper Activity</u></li> <li>Students will learn and be tested on proper use of a ruler, dial caliper and digital caliper.</li> </ul>		
<ul><li>Correct answers</li><li>Accurate measurements</li></ul>	Other Evid Corres Collect	<i>lence:</i> ponding test questions red measurement sheets		

**S3** LEARNING PLAN: Summary of Key Learning Events and Instruction

#### 1. Set Introduction

This activity will take one classroom day to complete.

#### 2. Pass Out Materials

Students will need the pennies, nickels, dimes and quarters (one set per measurement instrument) to make measurements.

#### 3. Familiarize

The teacher should be familiar with and present the materials or PowerPoint associated with measurement in this activity previous to the handson activity.

#### 4. Group Students

The instructor will determine the size of the groups that will work on the activity. If the activity is done individually, additional digital calipers will be needed. If the activity is done in groups with less than four students to a group, additional digital calipers will be needed.

#### 5. Pass Out Tools

The instructor will need to pass out the rulers, dial calipers and digital calipers. Students will enter their answers into the Learning Management System through the digital calipers assignment.

#### 6. Review

Have your students review the information via the online web portal under *Content Knowledge*. While the students are reading, pass out the necessary tools and text books to complete this exercise as needed.

#### 7. Student Time

Give each student ample time to complete the activity. Circulate around the room to verify each student is on task and progressing.

#### 8. Collect

At the completion of the activity, collect each student's tools.

#### 9. Class Review

If time permits, review the activity as a class and discuss the correct measurements and answers.



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#### 10. Remind Students

Remind your students to review all of the materials form this unit in preparation for the test.

#### **Progress Monitoring:**

- The instructor will need to monitor the classroom, checking student's work and ensuring students are on task and following directions.
- Ensure students store their projects at the end of class and leave all materials in the room.
- At the end of the activity, post student projects in the room and provide appropriate feedback

DIFFERENTIATION: Summary of Key Differentiation Techniques

Please use this space to insert your differentiation techniques. Depending on the needs of students, various techniques might be needed in a classroom, therefore use the information below and experts in the area needed to design your plan for differentiation.

The ASCD Study Guide for Integrating Differentiated Instruction and Understating by Design: Connecting Content and Kids. by Carol Ann Tomlinson, Jay McTighe

Integrating Differentiated Instruction and Understating by Design: Connecting Content and Kids. by Carol Ann Tomlinson, Jay McTighe ISBN-13: 978-1416602842 ISBN-10: 1416602844

Differentiating Reading Instruction by Laura Robb. ISBN13: 9780545022989

A Teacher's Guide to Differentiating Instruction The Center for Comprehensive School Reform and Improvement

CAREER CONNECTIONS: Summary of Career Opportunities Associated with this Lesson

#### **Civil Engineer**

Civil engineers rely on accurate measurements to design and construct various structures.

#### Architect

Architects use accurate measurements to design various structures.

#### **Health Science**

Many of those in the health science field rely on accurate measurements when working with humans and animals.

KEYWORDS: Please Insert Keywords from this Lesson with their Definitions

ACCURATE—the quality or state of being correct or precise.

MEASUREMENT—the action of measuring something.

INSTRUMENT—a tool or implement, especially one for delicate or scientific work



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