

03: Advanced Measuring Techniques

Content Area: **Technology**
Course(s):
Time Period: **Full Year**
Length: **1.5 weeks on going**
Status: **Published**

General Overview, Course Description or Course Philosophy

This full year course offers an introductory view on the tools, materials, and processes of modern woodworking. Students will familiarize themselves with common terminology and practices to complete avocational woodworking projects. This hands-on course calls for the production of several ‘everyday functional’ woodworking projects. The projects are chosen so that students can increase their knowledge and experience with regard to machine use and woodworking technique. The course goal is to allow students to produce pieces from plans on their own without instructor provided step by step instructions.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

- Why is it important for students to learn how to measure? -

Why is it important for students to measure accurately?

- Why is it important for students to understand the unit of measurement?

Why is it important for students to solve problems using measurement?

Enduring Understandings:

Students will understand the importance of...

- Accurate measurement
- Selecting correct unit of measurement
- Using measuring tools
- Accurate measurement to ensure quality
- Applying math skills to measurement
- Measurement conversions

Objectives:

Knowledge:

Students will know...

- Different measuring instruments
- Units of measure

Skills:

Students will be able to...

- Use and apply different measuring instruments
- Read dimensions from a technical drawing
- Apply measurements to the machining process

CONTENT AREA STANDARDS

9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
9.3.12.AC.6	Read, interpret and use technical drawings, documents and specifications to plan a project.
9.3.12.AC-CST.5	Apply practices and procedures required to maintain jobsite safety.
12.9.3.ST.6	Demonstrate technical skills needed in a chosen STEM field.
12.9.3.MN-HSE.1	Demonstrate the safe use of manufacturing equipment.
12.9.3.ST-ET.1	Use STEM concepts and processes to solve problems involving design and/or production.
12.9.3.ST-ET.2	Display and communicate STEM information.
12.9.3.ST-ET.3	Apply processes and concepts for the use of technological tools in STEM.
12.9.3.ST-ET.4	Apply the elements of the design process.
12.9.3.ST-ET.5	Apply the knowledge learned in STEM to solve problems.

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

LA.W.9-10.2	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
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LA.W.9-10.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
LA.W.9-10.6	Use technology, including the Internet, to produce, share, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
LA.RST.11-12.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
LA.RST.11-12.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.
LA.WHST.11-12.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
LA.WHST.11-12.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

STUDENT LEARNING TARGETS

To demystify the imperial measurement

Declarative Knowledge

Students will understand that:

- We measure in inches and feet

The inch is a fractional measurement of the foot.

The inch itself is divided into fractions

Imperial is different than metric.

Procedural Knowledge

Students will be able to:

-

Correctly identify an imperial rule vs a metric one.

Explain why saying .6 of an inch is incorrect

adjust machines to accurate measurements.

EVIDENCE OF LEARNING

Observation, discussion, and hands on interaction

- Measure within 1/16" with a graduated rule
- Application of measurement to machine setup
- Projects reflect accurate measurement

Formative Assessments

Measuring worksheets, project dimensioning

Summative Assessments

dimensionally accurate student made projects

RESOURCES (Instructional, Supplemental, Intervention Materials)

Teacher notes and quizzes available through Google Classroom/Drive.

Material processing project rubric.

INTERDISCIPLINARY CONNECTIONS

Educational Technology: Use of Google resources

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.