

Agricultural Science II

Curriculum Guide: *Agricultural Mechanics Unit for Agricultural Science II*

Unit: VI. Material Selection, Plan Reading, and Interpretation

Unit Objective:

Students will demonstrate an understanding of material selection and plan reading and interpretation by devising a plan of procedure, cutting list, and bill of materials for a project.

Show-Me Standards: 1.8, CA3

References:

Agricultural Construction Volume I. University of Missouri-Columbia, Instructional Materials Laboratory, 1989.

Agricultural Mechanics Building Plans. University of Missouri-Columbia, Instructional Materials Laboratory, 1994.

Agricultural Mechanics Plans (Set). University of Missouri-Columbia, Instructional Materials Laboratory.

Agricultural Mechanics Unit for Agricultural Science II. University of Missouri-Columbia, Instructional Materials Laboratory, 2002.

Pastoret, J. *Measurements and Pricing of Primary Wood Materials.* MU Extension. University of Missouri-Columbia. Accessed November 26, 2003, from <http://muextension.missouri.edu/explore/agguides/forestry/g05506.htm>.

Instructional Strategies/Activities:

- Students will engage in study questions in lessons 1 through 3.
- Additional activities that relate to the unit objective can be found under the heading "Other Activities" in the following locations: p. VI-14 and p. VI-30 (1, 2).

Performance-Based Assessment:

Students will develop a plan of procedure, cutting list, and bill of materials for a project based on a working drawing.

Assessment will be based on the thoroughness and accuracy of the plan of procedure, cutting list, and bill of materials.

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Instructor Guide

The instructor should assign the performance-based assessment activity at the beginning of the unit. Students will work toward completing the activity as they progress through the unit lessons. The assessment activity will be due at the completion of the unit.

1. Have students develop a plan of procedure, cutting list, and bill of materials for a project based on a working drawing.
 - a. See the Unit VI Activity, Preparing a Plan of Procedure, Cutting List, and Bill of Materials, pp. VI-45–VI-46, for a project plan and additional details. The activity includes a working drawing for a feed bunk. The plan of procedure, cutting list, and bill of materials for the feed bunk are included on p. VI-31 of the Instructor Guide.
 - b. For additional project plans, see *Agricultural Mechanics Building Plans* and *Agricultural Mechanics Plans (Set)*, available from the Instructional Materials Laboratory, University of Missouri-Columbia, accessed November 13, 2003, at <http://www.iml.coe.missouri.edu/>.
 - c. This activity could also be adapted for use with students' class projects, if desired.
2. The student handout for this activity is a cutting list work sheet, a bill of materials work sheet, and a plan of procedure work sheet.
 - a. The student handout work sheets are adapted from WS 3.1, Estimated Bill of Materials, p. VI-33, and WS 4.1, List of Tools and Procedures, p. VI-45, of *Agricultural Construction Volume I*, available from the Instructional Materials Laboratory, University of Missouri-Columbia, accessed November 13, 2003, at <http://www.iml.coe.missouri.edu/>.
 - b. For additional work sheets, handouts, and related material, see Unit VI, Project Construction, of *Agricultural Construction Volume I*.
3. The final assessment score will be based on the overall thoroughness and accuracy of the plan of procedure, cutting list, and bill of materials.
4. **ADDITIONAL ACTIVITY:** Divide the class into groups. Have the groups draw up a purchasing bill of material for the same project but assign each group different materials for the project. Variations in materials could include different types of material and different grades or dimensions of lumber. Have students present their findings to the class. Lead a discussion comparing the bills of materials. Ask students to explain which materials they would use and why.

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Student Handout

Date_____

Name_____

Project Title_____

Cutting List

Develop a cutting list from a working drawing.

Number of Pieces	Dimensions	Stock	Part and Use

Date _____

Project Title _____

Bill of Materials

Determine the materials you will need from a working drawing. Write "N/A" if a heading does not apply to a particular material.

Number of Pieces or Amount of Material	Dimensions	Material

Date_____

Name_____

Project Title_____

Plan of Procedure

Develop of plan of procedure from a working drawing.

Construction Procedure

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Name _____

Criteria	0 Points	1 Point	2 Points	3 Points	4 Points	Weight	Total
Cutting list includes all necessary materials in their final dimensions	Failed	Poor	Fair	Good	Excellent	X 7.5	
Bill of materials includes all necessary materials in standard dimensions, as well as any fasteners and finish	Failed	Poor	Fair	Good	Excellent	X 7.5	
Plan of procedure includes all steps needed to complete the project	Failed	Poor	Fair	Good	Excellent	X 10	

Final Assessment Total _____/100 pts.

Comments:

