

Module Learner Expectation

The student will:

- identify and describe the safe use of basic hand tools

Standard

Performance rating of 1 for each applicable task

Rating Scale

The student:

- 4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. *Quality, particularly details and finishes, and productivity are consistent and exceed standards.*
- 3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. *Quality and productivity are consistent.*
- 2 meets defined outcomes. Plans and solves problems with limited assistance. Tools, materials and/or processes are selected and used appropriately. *Quality and productivity are reasonably consistent.*
- 1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. *Quality and productivity are reasonably consistent.*
- 0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

TASK PERFORMANCE CRITERIA

The student:

Preparation and Planning

- follows instruction accurately
- responds to directed questions and follows necessary steps to find answers
- accesses basic in-school/community information sources
- organizes information in a logical manner
- records information accurately using correct technical terms
- uses time effectively

Content

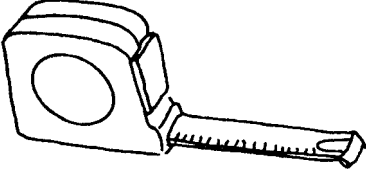
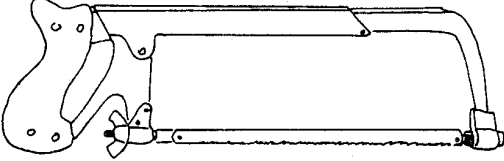
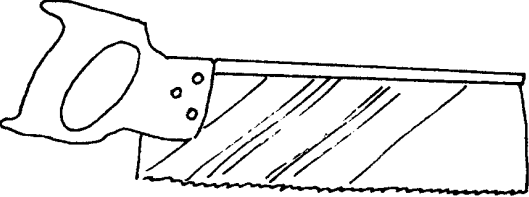
- develops a chart depicting 20 common hand tools
- classifies each tool according to the following categories:
 - measurement and layout tools
 - cutting/boring tools
 - assembly/dismantling tools
 - abrading tools
- describes the purpose and safe use of each tool

Presenting/Reporting

- demonstrates effective use of one or more communication media:
e.g., Written: spelling, punctuation, grammar basic format
Oral: voice projection, body language
Audio-visual: techniques, tools
- uses correct grammatical convention and technical terms
- provides an introduction that describes the purpose of the project
- communicates information in a logical sequence

PERFORMANCE ASSESSMENT

CRITERIA	STUDENT RATING					STANDARD	COMMENTS
Preparation and Planning	4	3	2	1	0	1	
Content	4	3	2	1	0	1	
Presenting/Reporting	4	3	2	1	0	1	

<u>TOOL</u>	<u>CATEGORY</u>	<u>DESCRIPTION</u>
	Measurement and Layout Tool	<p>A measuring tape is a spring-loaded steel tape that is carried in a pocket or pouch. It is easy to use and can be purchased in a variety of lengths in both metric and imperial measure. When retracting, care should be taken to avoid contact with the blade.</p>
<p><u>Measuring Tape</u></p>		
	Cutting Tool	<p>A hacksaw is used for straight cuts in metal or plastic. The work piece should be held firmly in place at all times. To avoid blade breakage when cutting thin material, the saw should be held so that at least three teeth are in contact with the material at all times.</p>
<p><u>Hacksaw</u></p>		
	Cutting Tool	<p>A backsaw is used to make accurate straight cuts in wood. It has a thin blade that is stiffened by a rigid frame along its top edge. A bench hook is often used in conjunction with the saw to provide greater accuracy and safety.</p>
<p><u>Backsaw</u></p>		

For additional sample items and responses, refer to:

Design and Technology. Kathy Browning et. al., 1994. Teacher's Resource.

Module Learner Expectation

The student will:

- identify and compare the properties of common materials used in construction and fabrication activities

Standard

Performance rating of 1 for each applicable task

Rating Scale

The student:

- 4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. *Quality, particularly details and finishes, and productivity are consistent and exceed standards.*
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- 1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. *Quality and productivity are reasonably consistent.*
- 0 has not completed *defined* outcomes. Tools, materials and/or processes are used inappropriately.

TASK PERFORMANCE CRITERIA

The student:

Preparation and Planning

- follows instructions accurately
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- accesses basic in-school/community information sources
- organizes information in a logical manner
- records information accurately using correct technical terms
- uses time effectively

Content

- identifies, in chart form, four or more materials in any two of the following categories:
 - solid and manufactured wood products
 - ferrous and non-ferrous metals
 - thermoforming and thermo-setting plastics
 - clay and concrete products
-

Content (continued)

- provides a sample and description of each material
- identifies a common use for each material

Presenting/Reporting

- demonstrates effective use of one or more communication media:
 - e.g., Written: spelling, punctuation, grammar basic format*
 - Oral: voice projection, body language*
 - Audio-visual: techniques, tools*
- uses correct grammatical conventions and technical terms
- provides an introduction that describes the purpose of the project
- communicates information in a logical manner

PERFORMANCE ASSESSMENT

CRITERIA	STUDENT RATING					STANDARD	COMMENTS
Preparation and Planning	4	3	2	1	0	1	
Content	4	3	2	1	0	1	
Presenting/ Reporting	4	3	2	1	0	1	

Module Learner Expectation

The student will:

- identify and describe the main systems found in a residential structure

Standard

Performance rating of 1 for each applicable task

Rating Scale

The student:

- 4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. *Quality, particularly details and finishes, and productivity are consistent and exceed standards.*
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TASK PERFORMANCE CRITERIA

The student:

Preparation and Planning

- follows instructions accurately
- responds to directed questions and follows necessary steps to find answers
- accesses basic in-school/community information sources
- organizes information in a logical manner
- records information accurately using correct technical terms
- uses time effectively

Content

- briefly describes each of the four systems found in a typical residential structure; e.g.:
 - structural
 - electrical
 - plumbing
 - heating venting and air-conditioning

Content (continued)

- elaborates on the:
 - system components
 - common materials
 - related tools
 - nature of the trades related to the system

Presenting/Reporting

- demonstrates effective use of one or more communication media:
 - e.g., Written: spelling, punctuation, grammar basic format*
 - Oral: voice projection, body language*
 - Audio-visual: techniques, tools*
- uses correct grammatical conventions and technical terms
- provides an introduction that describes the purpose of the project
- communicates information in a logical sequence

PERFORMANCE ASSESSMENT

CRITERIA	STUDENT RATING					STANDARD	COMMENTS
Preparation and Planning	4	3	2	1	0	1	
Content	4	3	2	1	0	1	
Presenting/ Reporting	4	3	2	1	0	1	

Module Learner Expectation

The student will:

- profile a trade or occupation within the building construction industry

Standard

Performance rating of 1 for each applicable criteria unless otherwise stated

Rating Scale

The student:

- 4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. *Quality, particularly details and finishes, and productivity are consistent and exceed standards.*
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- 0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

TASK PERFORMANCE CRITERIA

The student:

Preparation and Planning

- sets goals and follows instructions accurately
- adheres to established timelines
- responds to directed questions and follows necessary steps to find answers
- uses time effectively

Information Gathering Process

- accesses basic school/community information sources
- uses one or more information-gathering techniques
- interprets and organizes information in a logical sequence
- records information accurately using correct technical terms
- distinguishes between fact and fiction / option / theory
- responds to feedback when current approaches are not working

Content

- identifies one or more occupation or trade related to the building construction industry
- lists day-to-day duties of a worker or trades person
- describes overall working conditions
- assesses local employment opportunities
- identifies training programs and entry requirements

Information Sharing

- demonstrates effective use of one or more communication media:
e.g., written, oral, audio-visual
- communicates information in a logical sequence
- uses correct grammatical conventions and technical terms
- cites three or more basic information sources

PERFORMANCE ASSESSMENT

CRITERIA	STUDENT RATING					STANDARD	COMMENTS
Preparation and Planning	4	3	2	1	0	1	
Information Gathering and Processing	4	3	2	1	0	1	
Content	4	3	2	1	0	1	
Information Sharing	4	3	2	1	0	1	

Module Learner Expectation

The student will:

- identify and describe the parts of a technological system

Standard

Performance rating of 1 for each applicable task

Rating Scale

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TASK PERFORMANCE CRITERIA

<i>The student:</i>	
<p>Preparation and Planning</p> <ul style="list-style-type: none"> <input type="checkbox"/> follows instructions accurately <input type="checkbox"/> responds to directed questions and follows necessary steps to find answers <input type="checkbox"/> accesses basic in-school/community information sources <input type="checkbox"/> organizes information in a logical manner <input type="checkbox"/> records information accurately using correct technical terms <input type="checkbox"/> uses time effectively 	<p>Content (continued)</p> <ul style="list-style-type: none"> <input type="checkbox"/> provides a brief description of each component <input type="checkbox"/> explains the difference between an open and closed system <p>Presenting/Reporting</p> <ul style="list-style-type: none"> <input type="checkbox"/> demonstrates effective use of one or more communication media: <i>e.g., <u>Written</u>: spelling, punctuation, grammar basic format</i> <i><u>Oral</u>: voice projection, body language</i> <i><u>Audio-visual</u>: techniques, tools</i> <input type="checkbox"/> uses correct grammatical conventions and technical terms <input type="checkbox"/> provides an introduction that describes the purpose of the project <input type="checkbox"/> communicates information in a logical sequence
<p>Content</p> <ul style="list-style-type: none"> <input type="checkbox"/> identifies the major parts of a technological system in chart form to include: <ul style="list-style-type: none"> - input - process - output - feedback mechanisms 	

PERFORMANCE ASSESSMENT

CRITERIA	STUDENT RATING					STANDARD	COMMENTS
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Content	4	3	2	1	0	1	
Presenting/ Reporting	4	3	2	1	0	1	

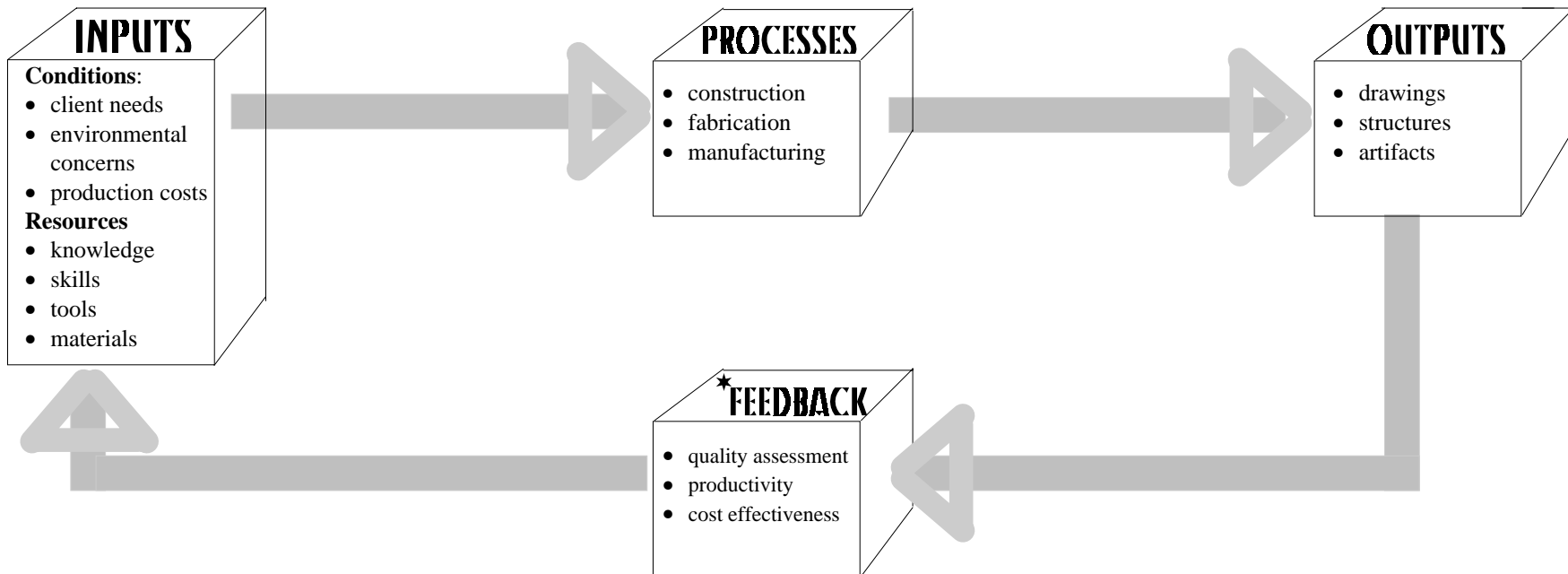
Presentation

Task:

- identify the basic parts of a technological system
- provide a description of each component
- explain the difference between an open and closed system

Student References:

- *Construction Technology* (2nd and 3rd edition). Mark W. Huth, 1989 & 1996.
- *Living With Technology* (2nd edition). Michael Hacker, 1993.



* An open system does not have a feedback mechanism.

Module Learner Expectations

The student will:

- apply basic drawing skills to prepare a shop drawing
- prepare a project timeline, cost estimate and work schedule
- apply the use of a technological system to construct a simple product with multiple parts

Standard

Performance rating of 1 for each applicable criteria

Rating Scale

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- 0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

TASK PERFORMANCE CRITERIA

The student:

Planning and Management (Input)

- generates one or more project ideas
- identifies project with multiple parts
- produces/modifies simple pictorial and/or multiviewed sketch or drawing as required
- provides accurate dimensions and notes
- provides accurate material estimate and work schedule

Work Skills (Process)

- follows instructions as directed
- adheres to established timeline
- works cooperatively with others in structured settings
- uses appropriate tools, materials and processes
- calculates and measures accurately
- uses prescribed personal protective equipment
- handles, stores and/or disposes of materials as instructed

Construction Techniques (Process)

- cuts and secures stock according to plan
- creates tight-fitting joints
- appropriately assembles and finishes the product

Project Presentation (Output and Feedback)

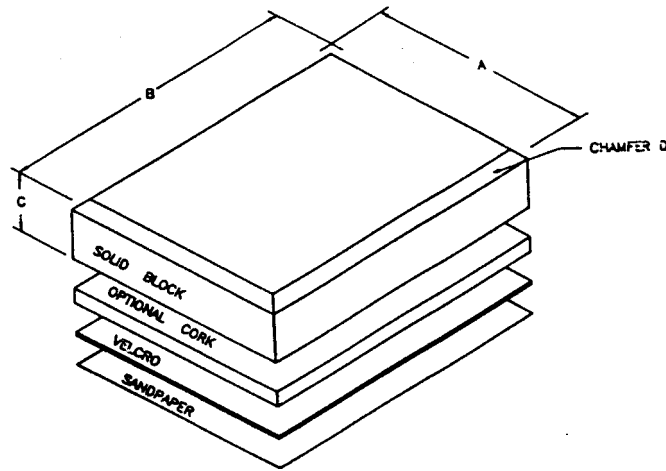
- describes the project and its intended use
- summarizes and reports on major production events
- assesses the design and production processes
- recommends changes to improve quality, performance and appearance

PERFORMANCE ASSESSMENT

CRITERIA	STUDENT RATING					STANDARD	COMMENTS
Planning and Management	4	3	2	1	0	1	
Construction Techniques	4	3	2	1	0	1	
Work Skills	4	3	2	1	0	1	
Project Presentation	4	3	2	1	0	1	

Rationale:

A simple product such as this sanding block can be used to show students how input, process, output and feedback mechanisms can be used to plan and manage a project.



Specifications:

	Metric	Imperial
A	75 mm	3"
B	100 mm	4"
C	20 mm	3/4"
D	6 mm	1/4"

1. Materials – Pine or other suitable solid wood.
2. Size: this can be adapted for the situation a common size is 20 mm x 75 mm x 100 mm or 3/4" x 3" x 4". **TOLERANCE – ± 2mm or ± 1/16"**.
3. The cork is cut oversized and is attached with contact cement.
4. Velcro with a stick back is applied over the cork.
5. Sizes of sandpaper (special type with back that is attachable to Velcro) can be cut to the block dimensions.

MATERIAL ESTIMATE							COST ESTIMATE	
Component	#	T	W	L	Material Type	Material Amount	Unit Cost	Total Cost
TIME ESTIMATE Start _____ Finish _____							FINISH:	\$ _____
							SUB-TOTAL:	\$ _____
							SHOP FEE:	\$ _____
							TOTAL COST:	\$ _____
TOTAL HOURS: _____								

Event Sequence:

1. Given a rough piece of lumber, measure and layout the appropriate measurements.
2. Crosscut the material to length.
3. Plan the face side and face edge.
4. Measure and layout the lines for width and thickness.
5. Plane the block down to size. (Measure twice – cut once!!)
6. Mark a 6 mm (1/4") chamfer.
7. Plane a chamfer between layout lines.
8. Cut the cork a little over size and glue to the bottom.
9. Once the glue is dry, trim with a fine set plane.
10. Carefully cut and attach velcro to the cork.
11. Cut a piece of sandpaper and attach it to the velcro.
12. Clean up the block and hand it in for evaluation.

Project developed by Brian Larson, Lacombe Composite High School, Lacombe

Module Learner Expectation

The student will:

- identify and describe the physical characteristics of a variety of hard and soft woods

Standard

Response rating of 1

Rating Scale

The student:

- 4 independently makes explanations and critical judgements based on a superior knowledge base and understanding of content and related issues.
- 3 makes explanation and comparisons of content using precise terminology. Requires little or no prompting.
- 2 applies knowledge of content to different situations using accurate terminology. May require some prompting.
- 1 uses simple recall to demonstrate basic knowledge and understanding of content. May require frequent prompting.
- 0 is unable to provide a suitable response at this time.

Sample Item(s)	Sample Response(s)
<p>1. All woods have their own unique characteristics. Identify and describe four different woods used in solid stock construction.</p> <p>2. What is the difference between a hard wood and a soft wood?</p> <p>3. Describe four common wood defects associated with solid lumber</p>	<p><u>Pine (Western White Pine):</u> Western pine is a close grained soft wood that has a cream to light brown colour. It works easily with tools and resists splitting.</p> <p><u>Mahogany:</u> Mahogany is a moderately hard wood that varies from a pale to deep reddish brown colour. This wood has excellent working and finishing characteristics even though its open pores require filling before finishing.</p> <p><u>Red Oak:</u> Red Oak has a noticeable reddish tint. Pores are open and usually require filling before finishing. Drying must be done slowly to avoid checking and warping. Red Oak has good machining qualities.</p> <p><u>Poplar:</u> Poplar is a light weight moderately priced hard wood. It works well with hand and power tools. Its colour ranges from a pale olive brown to greenish white.</p> <p>Hard woods come from broad leaf (deciduous) trees. Soft woods come from needle leaf (coniferous) trees.</p> <p>Common wood defects include:</p> <ul style="list-style-type: none"> - loose knots - checks or splits at the ends of boards - pitch pockets commonly found in soft woods - warping caused by improper drying and/or storage.

For additional items and responses refer to:

- *Exploring Woodworking: Fundamentals of Technology.* Fred W. Zimmerman et al. 1993. Text and Workbook.
- *Technology Shaping Our World.* John Gradwell et. al., 1996. Text and Instructor’s Manual.

Module Learner Expectation

The student will:

- construct a wooden product, using basic joinery techniques

Standard

Performance rating of 1 for each applicable task

Rating Scale

The student:

- 4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. *Quality, particularly details and finishes, and productivity are consistent and exceed standards.*
- 3 meets defined outcomes. Plans and solves problems in a self-directed manner. Tools, materials and/or processes are selected and used efficiently and effectively. *Quality and productivity are consistent.*
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- 1 meets defined outcomes. Follows a guided plan of action. A limited range of tools, materials and/or processes are used appropriately. *Quality and productivity are reasonably consistent.*
- 0 has not completed defined outcomes. Tools, materials and/or processes are used inappropriately.

TASK PERFORMANCE CRITERIA

The student:

Planning and Management

- defines project requirement
- gathers background information from sources provided
- generates one or more project idea
- produces/modifies simple pattern or template
- provides accurate dimensions and notes

Construction Techniques

- cuts and squares stock according to plan
- assembles and glues stock correctly
- surfaces and finishes to size
- shapes handle according to pattern
- applies suitable finish

Work Skills

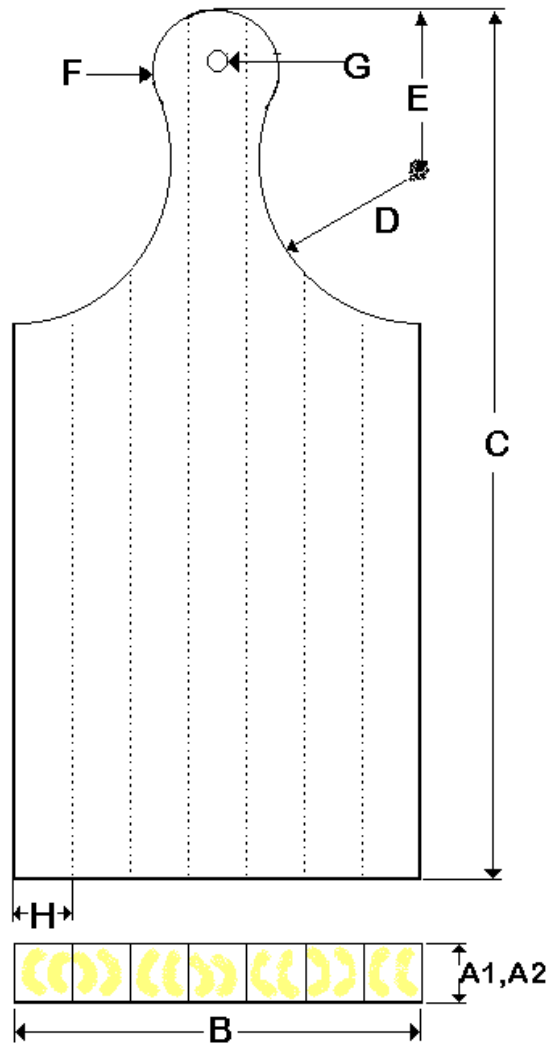
- follows instructions as directed
- adheres to established timeline
- works cooperatively with others in structured settings
- uses appropriate tools, materials and processes
- calculates and measures accurately
- uses recommended personal protective equipment
- handles, stores and/or disposes of materials as instructed
- _____

Project Presentation (Output and Feedback)

- describes the project and its intended use
- summarizes and reports on major production events
- assesses the design and production processes
- recommends changes to improve quality, performance and appearance

PERFORMANCE ASSESSMENT

CRITERIA	STUDENT RATING					STANDARD	COMMENTS
Planning and Management	4	3	2	1	0	1	
Construction Techniques	4	3	2	1	0	1	
Work Skills	4	3	2	1	0	1	
Project Presentation	4	3	2	1	0	1	



Recommended Materials

1 – 19 mm x 160 mm x 305 mm (3/4" x 6 1/4" x 12") surfaced two sides maple or birch with vegetable oil finish.

Specifications

Part	Metric	Imperial	Notes
A1	22 mm	7/8"	Rough size
A2	19 mm	3/4"	Finished size
B	135 mm	5 1/4"	Finished size
C	300 mm	11 3/4"	Finished size
D	50 mm R	2" R	Finished size
E	50 mm	2"	
F	22 mm R	7/8" R	Finished size
G	6 mm D	1/4" D	Centre hole
H	19 mm	3/4"	Finished size

Quality Indicators

Assessment Criteria	Standard	Finished Product
Thickness 19 mm (3/4")	± 2 mm (1/16")	
Width 135 mm (5 1/4")	± 2 mm (1/16")	
Length 300 mm (11 3/4")	± 2 mm (1/16")	
Handle Shape	Evenly sculptured and smooth	
Surface Finish	Free of marks, gouges, burns and voids	

Construction Overview

Steps	Event Sequence
1.	Cut stock to length
2.	Surface face sides if necessary
3.	Rip strips for gluing
4.	Assemble and glue stock
5.	Surface face sides
6.	Lay out pattern
7.	Cut out shape of board
8.	Drill hole in handle
9.	Surface edges to size
10.	Prepare surfaces for finishing
11.	Apply finish.

COMMENTS:

Source: Adapted from material provided by the Northern Alberta Institute of Technology, Woodworking Section.

Module Learner Expectation

The student will:

- identify and describe the characteristics of common manufactured materials

Standard

Response rating of 1

Rating Scale

The student:

- 4 independently makes explanations and critical judgements based on a superior knowledge base and understanding of content and related issues.
- 3 makes explanation and comparisons of content using precise terminology. Requires little or no prompting.
- 2 applies knowledge of content to different situations using accurate terminology. May require some prompting.
- 1 uses simple recall to demonstrate basic knowledge and understanding of content. May require frequent prompting.
- 0 is unable to provide a suitable response at this time.

Sample Item(s)	Sample Response(s)
<ol style="list-style-type: none"> 1. List four manufactured sheet materials. 2. Describe how they are made and identify one or more of their main characteristics. 	<p><u>Plywood:</u> Plywood is made from an odd number of thin sheets of wood glued together so that the grain is at right angles to the grain in the next layer. Plywood is very strong, resists warpage and can be finished in a variety of ways.</p> <p><u>Blockboard:</u> Blockboard is made from a core of solid pieces covered with a veneer on each side. Blockboard is strong and easily finished.</p> <p><u>Particleboard:</u> Particleboard is made from small wood chips that are glued and pressed together into sheets with very smooth surfaces suitable for painting or plastic laminates. Particle board tends to break easily and does not hold nails or screws well.</p> <p><u>Waferboard:</u> Waferboard is made from flakes of wood that are bonded together, under heat and pressure, with a waterproof adhesive. This material is strong and less expensive than plywood.</p>

For additional items and responses refer to:

- *Exploring Woodworking: Fundamentals of Technology.* Fred W. Zimmerman et al. 1993. Text and Workbook.
- *Technology Shaping Our World.* John Gradwell et. al., 1996. Text and Instructor’s Manual.

Module Learner Expectation

The student will:

- create a product from a manufactured material, using basic joinery techniques

Standard

Performance rating of 1 for each applicable task

Rating Scale

The student:

- 4 exceeds defined outcomes. Plans and solves problems effectively and creatively in a self-directed manner. Tools, materials and/or processes are selected and used efficiently, effectively and with confidence. *Quality, particularly details and finishes, and productivity are consistent and exceed standards.*
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TASK PERFORMANCE CRITERIA

The student:

Planning and Management

- defines project requirement
- gathers background information from sources provided
- generates one or more project idea
- produces/modifies simple pictorial and or multiviewed sketch or drawing as required
- provides accurate dimensions and notes

Construction Techniques

- assembles and finishes according to the project plan
- cuts and squares stock according to plan
- assembles and fastens stock as indicated
- finishes surfaces as required

Work Skills

- uses appropriate tools, materials and processes
- measures and cuts accurately
- follows instructions as directed
- adheres to established timeline
- works cooperatively with others in structured settings
- uses recommended personal protective equipment
- handles, stores and/or disposes of materials as instructed

Project Presentation

- describes the project and its intended use
- summarizes and reports on major production events
- assesses the design and production processes
- recommends changes to improve quality, performance and appearance

PERFORMANCE ASSESSMENT

CRITERIA	STUDENT RATING					STANDARD	COMMENTS
Planning and Management	4	3	2	1	0	1	
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Work Skills	4	3	2	1	0	1	
Project Presentation	4	3	2	1	0	1	

Module Learner Expectation

The student will:

- list and describe common materials and processes used in casting/molding

Standard

Response rating of 2

Rating Scale

The student:

- 4 independently makes explanations and critical judgements based on a superior knowledge base and understanding of content and related issues.
- 3 makes explanation and comparisons of content using precise terminology. Requires little or no prompting.
- 2 applies knowledge of content to different situations using accurate terminology. May require some prompting.
- 1 uses simple recall to demonstrate basic knowledge and understanding of content. May require frequent prompting.
- 0 is unable to provide a suitable response at this time.

Sample Item(s)	Sample Response(s)
<ol style="list-style-type: none"> 1. Identify three common casting/molding materials. 2. Describe how these materials are prepared for casting/molding. 	<p><u>Clay slip:</u> Water is added to clay to form a slurry that can be poured into a plaster mold.</p> <p><u>Concrete</u> Concrete is a mixture of water, aggregate (sand and gravel) and cement that can be poured into a mold for form.</p> <p><u>Polystyrene beads</u> Polystyrene beads are heated in a chamber to a liquid state and then forced into a mold cavity by means of an injection press.</p>

For additional items and responses, refer to:

- *Production Technology*. Stanley G. Komacek, 1993. Text.
- *Design and Technology*. Kathy Browning et. al., 1994. Teacher’s Resource.