

MODULE CURRICULUM AND ASSESSMENT STANDARDS:

SECTION D: INTRODUCTORY LEVEL

The following pages define the curriculum and assessment standards for the introductory level of Construction Technologies.

Introductory level modules help students build daily living skills and form the basis for further learning. Introductory modules are developed for students who have no previous experience in the strand.

Module learner expectations define the competencies a student must demonstrate to achieve success in a module. Assessment standards define the criteria and conditions to be used for assessing the competencies defined in the module learner expectations.

Specific learner expectations provide a detailed framework for instruction and help students build the competencies defined in the module learner expectations. Additional information and suggestions for instruction are provided in the Notes column; teachers may wish to use this space to record their ideas for instruction or student projects.

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MODULE CON1010: BASIC TOOLS & MATERIALS

Level: Introductory

Theme: Building Systems (Processes and Applications)

Prerequisite: None

Module Description: Students develop basic hand tool and production skills to transform, safely, common building materials into useful products.

Module Parameters: Access to a materials work centre, complete with basic hand tools.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> identify and describe the safe use of basic hand tools 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> the identification and description of 20 basic hand tools used in construction and fabrication to include two or more: <ul style="list-style-type: none"> – measurement and layout tools – cutting and boring tools – assembly and dismantling tools – abrading and sharpening tools. <p><i>Assessment Tool</i> <i>Presentations/Reports: Hand Tools, CON1010–1</i> <i>Illustrative Example: Hand Tool Presentation, CON1010–2</i></p> <p><i>Standard</i> <i>Correct identification and description of 16 basic hand tools</i> <i>Performance rating of 1 for each applicable task</i></p>	15
<ul style="list-style-type: none"> identify and compare the properties of common materials used in construction and fabrication activities 	<ul style="list-style-type: none"> a written or oral presentation that compares the properties of four different materials in any two of the following material categories: <ul style="list-style-type: none"> – solid and manufactured wood products – ferrous and nonferrous metals – thermoforming and thermosetting plastics – clay and concrete products. <p><i>Assessment Tool</i> <i>Presentations/Reports: Material Identification, CON1010–3</i></p> <p><i>Standard</i> <i>Performance rating of 1 for each applicable task</i></p>	15

MODULE CON1010: BASIC TOOLS & MATERIALS (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • apply construction/fabrication processes and skills to produce a product • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • demonstration of safe construction and fabrication skills to plan, construct/fabricate, assemble and finish a useful product. <p><i>Assessment Tool</i> <i>Assessment Framework: Project Assessment, CONPRO</i></p> <p><i>Standard</i> <i>The product is made according to the prepared drawing and event sequence, tools and materials are used according to accepted safe practice</i> <i>Performance rating of 1 for each applicable task</i></p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p style="text-align: center;">70</p> <p style="text-align: center;">Integrated Throughout</p>

Concept	Specific Learner Expectations	Notes
<p>Orientation</p> <ul style="list-style-type: none"> • Tools and Equipment • Materials 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify and describe basic hand tools that are used to measure, mark, hold, cut, form, fasten and finish materials • identify and compare the properties of a variety of common materials used to make artifacts and structures • identify common shapes, sizes and forms of construction and fabrication materials 	<p>Introduce students to the safe use of manually operated and power assisted hand tools.</p> <p>Discuss reasons for choosing one material over another for a given application.</p>

MODULE CON1010: BASIC TOOLS & MATERIALS (continued)

Concept	Specific Learner Expectations	Notes
<ul style="list-style-type: none"> • Health and Safety • Production Systems 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe appropriate methods to handle, recycle, store and dispose materials • identify and demonstrate the appropriate use of personal protective equipment • identify steps to be taken in the event of an accident • outline the typical phases in a production system; e.g.: <ul style="list-style-type: none"> – planning – constructing/fabricating – assembling – finishing – evaluating. 	<p>Help students evaluate the short- and long-term impact of the choice of a material on the health of individuals and the environment.</p> <p>Compare those activities to the input, process, output and feedback mechanisms described in other technological systems.</p>
<p>Planning and Management</p> <ul style="list-style-type: none"> • Product Development 	<ul style="list-style-type: none"> • select or modify a plan for a simple product that will meet a defined need • identify and select the appropriate tools, materials and processes required to make the product • list the steps that are required to make a product in a safe and logical order. 	<p>Students are more highly motivated if they can choose and personalize a project.</p>
<p>Implementation</p> <ul style="list-style-type: none"> • Material Processing 	<ul style="list-style-type: none"> • develop basic construction/fabrication skills by building, assembling and finishing a variety of products. 	<p>In addition to woods and metals, students should gain experience using a variety of materials such as plastic and earths.</p>
<p>Assessment</p> <ul style="list-style-type: none"> • Product Quality • Career Preparation 	<ul style="list-style-type: none"> • describe ways to improve product quality and productivity • create a record of completed activities within a portfolio. 	<p>Students should be encouraged to make reflective notes and keep a record of their completed work.</p>

MODULE CON1070: BUILDING CONSTRUCTION

Level: Introductory

Theme: Building Systems (Processes and Applications)

Prerequisite: CON1010 Basic Tools & Materials

Module Description: Students examine common building systems, and develop basic skills related to building a simple model or full-size system/structure.

Module Parameters: Access to a materials work centre complete with basic hand tools.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> identify and describe the main systems found in a residential structure 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> an oral or written presentation that identifies and describes the four major systems found in a residential structure. <p><i>Assessment Tool</i> <i>Presentations/Reports: Building Systems, CON1070-1</i></p> <p><i>Standard</i> <i>Presentation will identify and describe the purpose and major components of the structural, electrical, heating and plumbing systems</i> <i>Performance rating of 1 for each applicable task</i></p>	20
<ul style="list-style-type: none"> list and describe the basic materials and hand tools used in building construction 	<ul style="list-style-type: none"> the accurate identification and description of four different building materials and 10 hand tools used in building construction. <p><i>Assessment Tool</i> <i>Presentations/Reports: Building Systems, CON1070-1</i></p> <p><i>Standard</i> <i>Performance rating of 1 in each applicable task</i></p>	20

MODULE CON1070: BUILDING CONSTRUCTION (continued)

Concept	Specific Learner Expectations	Notes
<p>Orientation</p> <ul style="list-style-type: none"> • Nature of Construction • Project Design and Construction • Health and Safety 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • list and describe the major types of construction projects; e.g.: <ul style="list-style-type: none"> – residential – industrial – commercial – civil • describe how information is gathered and used in the construction industry • list and describe the systems that are found in most buildings; e.g.: <ul style="list-style-type: none"> – structural – electrical – heating, ventilating and air conditioning – water and waste removal • describe the methods that are used to communicate ideas and information relative to design and construction of a project • identify the factors that affect the design of a structure such as safety, function and aesthetics • identify design techniques that are used to counteract static and dynamic forces on a structure • describe how structural materials and construction tools are safely used on the work site. 	<p>Students should understand that a construction project can be something other than a building.</p> <p>Refer to the clients' needs, site information engineering specifications and building codes.</p> <p>Have students gain experiences reading simple architectural drawings.</p> <p>Investigate the use of braces, trusses and ties commonly used in construction.</p> <p>Have students become aware of the role of OH&S in relation to workers.</p>
<p>Planning and Management</p> <ul style="list-style-type: none"> • Design 	<ul style="list-style-type: none"> • select or modify a set of working drawings to build a simple building structure or system • select or identify an appropriate location 	<p>The structure can be full size or built to scale.</p>

MODULE CON1070: BUILDING CONSTRUCTION (continued)

Concept	Specific Learner Expectations	Notes
<ul style="list-style-type: none"> • Material Selection 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify the materials that can be used to construct the: <ul style="list-style-type: none"> – foundation or support system – floor and wall system – roof system – exterior/interior finishes • describe the landscaping features that will be used to complete the project. 	<p>All terminology used in this module should be consistent with the <i>Canadian Wood-Frame House Construction</i> glossary of terms.</p>
<p>Implementation</p> <ul style="list-style-type: none"> • Building Processing • Personal Safety 	<ul style="list-style-type: none"> • use the appropriate tools, materials and processes to: <ul style="list-style-type: none"> – construct a simple shelter, scale model or system • use the appropriate personal protective clothing and equipment. 	
<p>Assessment</p> <ul style="list-style-type: none"> • Career Information • Career Preparation 	<ul style="list-style-type: none"> • identify and describe skilled, technical and professional occupations that are related to the building construction industry • identify and assess personal interests and abilities related to making realistic career choices • maintain a record of completed activities within a portfolio. 	

MODULE CON1120: PROJECT MANAGEMENT

Level: Introductory

Theme: Manufacturing Systems (Processes and Applications)

Prerequisite: CON1010 Basic Tools & Materials

Module Description: Students develop basic shop drawing and estimating skills, and apply them to build a product.

Module Parameters: Access to a materials work centre, complete with basic drawing and construction tools, and to instruction from an individual with specialized training in the use of power tools.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> identify and describe the parts of a technological system 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> visual presentation of a technological system that includes: <ul style="list-style-type: none"> – identification of the components of a technological system such as input, process, output, feedback – description of each component – explanation of the difference between an open and closed system. <p><i>Assessment Tool</i> <i>Presentations/Reports: Technological System, CON1120–1</i> <i>Illustrative Example: Technology System, CON1120–2</i></p> <p><i>Standard</i> <i>Performance rating of 1 for each applicable task</i></p>	10
<ul style="list-style-type: none"> apply basic drawing skills to prepare a shop drawing 	<ul style="list-style-type: none"> demonstration of basic drawing skills to produce a shop drawing of a simple product with two or more parts. <p><i>Assessment Tool</i> <i>Project Assessment: Project Development and Presentation, CON1120–3</i></p> <p><i>Standard</i> <i>Views are to be appropriately identified, laid out and measurements are within the accepted tolerance of ± 1 mm. Quality of lining, dimensioning and lettering meet accepted practice</i> <i>Performance rating of 1 for each applicable task</i></p>	25

MODULE CON1120: PROJECT MANAGEMENT (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • prepare a project timeline, cost estimate and work schedule • apply the use of a technological system to construct a simple product with multiple parts • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • completion of a bill of materials, time and cost estimate and event sequence for a simple multiple part project. <p><i>Assessment Tool</i> <i>Project Assessment: Project Development and Presentation, CON1120-3</i></p> <p><i>Standard</i> <i>Bill of materials includes proper material and size description; accurate quantities of materials and costs. Major events are identified, time estimated and sequenced in a safe and logical manner</i> <i>Performance rating of 1 for each applicable task</i> • demonstration of basic production skills to safely construct a product with multiple parts or components. <p><i>Assessment Tool</i> <i>Project Assessment: Project Development and Presentation, CON1120-3</i> <i>Illustrative Example: Technology System, CON1120-2</i></p> <p><i>Standard</i> <i>The product is constructed according to the prepared drawing, event sequence, cost and time estimates</i> <i>Performance rating of 1 for each applicable task</i></p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p> </p>	<p>15</p> <p>50</p> <p>Integrated throughout</p>

MODULE CON1120: PROJECT MANAGEMENT (continued)

Concept	Specific Learner Expectations	Notes
<p>Orientation</p> <ul style="list-style-type: none"> • Technological System • Drawing Types • Product Design • Estimating 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe the components of a technological system; e.g.: <ul style="list-style-type: none"> – input – output – process – feedback • list and describe common types of shop drawings • identify manual techniques and/or computer processes to create a drawing • identify a variety of products and describe the types of materials, joints, fastening and finishing systems that are used and explain how these details are shown on a drawing • identify the method of costing materials using lineal, area and volume measurements • describe methods that are used to estimate the amount of time required to complete a project. 	<p>Use activities related to the planning and development of a simple product to show how the parts of a technologies system work together.</p> <p>Have the students work primarily with orthographic, oblique and isometric drawings.</p> <p>Have students identify the types of fasteners and adhesives that are used in conjunction with butt, dado, rabbet and miter joints to produce a product.</p> <p>Point out the importance of being able to measure and calculate accurately in time and cost estimates and quality of the product.</p>
<p>Planning and Management</p>	<ul style="list-style-type: none"> • create or modify a suitable product design • prepare a working drawing of a product with multiple parts • analyze the drawing to create a: <ul style="list-style-type: none"> – material list – cost estimate – work schedule. 	<p>Project choices might include:</p> <ul style="list-style-type: none"> • toy • furniture accessory • kitchen accessory.

MODULE CON1120: PROJECT MANAGEMENT (continued)

Concept	Specific Learner Expectations	Notes
<p>Implementation</p> <ul style="list-style-type: none"> • Material Processing • Health and Safety 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • for a product with multiple parts, use the appropriate tools, materials and processes to: <ul style="list-style-type: none"> – lay out, cut, surface and size materials – assemble and fasten parts – prepare for finishing – apply a simple finish • matches the manufacturer’s recommendations and WHMIS regulations when using hazardous finishing materials • use personal protective equipment. 	<p>Review tool and equipment safety as well as the safe use of hazardous materials.</p> <p>Ensure containers are labelled and adequate ventilation is provided.</p>
<p>Assessment</p> <ul style="list-style-type: none"> • Quality Control • Career Preparation 	<ul style="list-style-type: none"> • identify methods to improve quality and productivity; e.g.: <ul style="list-style-type: none"> – accurate measurements – choice of correct tools – use of tools that are in good condition • maintain a record of completed activities within a portfolio. 	<p>Students should be encouraged to make reflective notes and keep a record of work completed.</p>

MODULE CON1130: SOLID STOCK CONSTRUCTION

Level: Introductory

Theme: Manufacturing Systems (Processes and Applications)

Prerequisite: CON1010 Basic Tools & Materials

Module Description: Students develop basic hand and power tool skills to build a product made from solid wood.

Module Parameters: Access to a materials work centre complete with basic hand and power tools, and to instruction from an individual with specialized training in the use of power tools.

Supporting Module: CON1120 Project Management

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> identify and describe the physical characteristics of a variety of hard and soft woods apply basic drawing and transfer skills to prepare a pattern or template construct a wooden product, using basic joinery techniques 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> the accurate identification and description of four solid woods used to construct wooden products. <p><i>Assessment Tool</i> <i>Response Assessment: Wood Characteristics, CON1130-1</i></p> <p><i>Standard</i> <i>Response rating of 1</i></p>	15
	<ul style="list-style-type: none"> application of the principles of proportion and transfer skills to produce a pattern or template from a scale drawing. <p><i>Standard</i> <i>The template is to be within ± 1 mm of the original plan or object</i> <i>Performance rating of 1 for each applicable task</i></p>	15
	<ul style="list-style-type: none"> demonstration of basic joinery skills to safely construct a product from solid stock. <p><i>Assessment Tool</i> <i>Project Assessment: Building with Solid Stock, CON1130-2</i> <i>Illustrative Example: Cutting Board, CON1130-3</i></p> <p><i>Standard</i> <i>The product should be constructed according to the prepared template, working drawing and event sequence. Joints are to be tight fitting, surfaces should be free of marks, gouges, burns and voids</i> <i>Performance rating of 1 for each applicable task</i></p>	70

MODULE CON1130: SOLID STOCK CONSTRUCTION (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
<p>Orientation</p> <ul style="list-style-type: none"> Solid Stock Built-up Stock Tool Safety 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> describe the physical characteristics of a variety of hard and soft woods list and describe common wood faults identify and describe correct methods of handling and storing lumber describe common methods of making a built-up surface using edge joints and reinforce with dowels, biscuits or splines describe the process of squaring solid stock describe the safe operation of hand and power equipment that are used to: <ul style="list-style-type: none"> joint and surface solid stock cut and shape irregular surfaces scrape and sand flat and irregular surfaces. 	<p>Point out the importance of storing materials correctly.</p> <p>Stress the importance of squaring stock in the proper sequence.</p> <p>Introduce students to the appropriate hand and power tools.</p>

MODULE CON1130: SOLID STOCK CONSTRUCTION (continued)

Concept	Specific Learner Expectations	Notes
<p>Planning and Management</p> <ul style="list-style-type: none"> • Product Design 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify common shapes and lines used in product design • select or modify a plan for a free-standing or wall-mounted product that is made from solid or built-up stock • produces a pattern or template from a scale drawing • develop a cutting list and event sequence. 	<p>Explain how straight, circular and curved lines can be used to form pleasing shapes.</p> <p>Projects to consider might include a wall or corner shelf, bench, cutting board or turned product.</p>
<p>Implementation</p> <ul style="list-style-type: none"> • Material Processing 	<ul style="list-style-type: none"> • use the appropriate tools, materials and processes to: <ul style="list-style-type: none"> – cut and surface stock – joint, glue and clamp – measure and lay out parts – cut and shape parts – assemble and fasten – prepare for finishing – apply a finish. 	<p>It is important that students receive safety instruction prior to the use of hand and power tools.</p>
<p>Assessment</p> <ul style="list-style-type: none"> • Quality control • Career Preparation 	<ul style="list-style-type: none"> • complete a visual inspection of the product to see that the joints are tight fitting, and surfaces are free of marks, gouges, burns and voids • maintain a record of completed activities within a portfolio. 	

MODULE CON1140: TURNING OPERATIONS

Level: Introductory

Theme: Manufacturing Systems (Processes and Applications)

Prerequisite: CON1130 Solid Stock Construction

Module Description: Students use wood-turning equipment and techniques to create a faceplate and spindle turning made from solid and/or built-up stock.

Module Parameters: Access to a materials work centre, complete with basic hand and power tools, and to instruction from an individual with specialized training in the use of power tools.

Supporting Module: CON1120 Project Management

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> operate, safely, a power wood lathe 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> demonstration of the safe set-up, use and shut-down procedures. <p><i>Assessment Tool</i> <i>Equipment Checklist: Wood Lathe, CONEQUIP-3</i></p> <p><i>Standard</i> <i>All procedures are performed according to standard lathe practice and specific recommendations of the lathe manufacturer</i></p>	15
<ul style="list-style-type: none"> apply drawing and transfer skills to prepare a full-size pattern or template 	<ul style="list-style-type: none"> preparation of a full-size pattern or template. <p><i>Standard</i> <i>The pattern and/or template is to be within ± 1 mm of the original plan or object</i> <i>Performance rating of 2 for each applicable task</i></p>	15
<ul style="list-style-type: none"> produce a faceplate and spindle turning, using solid or built-up stock 	<ul style="list-style-type: none"> demonstration of accepted material preparation and wood-turning skills. <p><i>Assessment Tool</i> <i>Assessment Framework: Project Assessment, CONPRO</i></p> <p><i>Standard</i> <i>The turnings should be within ± 2 mm of the original drawing or free formed according to accepted design principles. The product should be free of major production defects (machining marks, gouges, burns and voids)</i> <i>Performance rating of 2 for each applicable task</i></p>	70

MODULE CON1140: TURNING OPERATIONS (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
<p>Orientation</p> <ul style="list-style-type: none"> Health and Safety Materials 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> identify and demonstrate the safe use and operation of the wood lathe identify the common lathe chisels and accessories associated with wood turning describe recommended tools and accessories for faceplate and spindle turning identify and describe accepted work piece mounting and supporting techniques describe the turning characteristics of a number of common woods identify finishes and finishing procedures suitable for common turned products. 	<p>Discuss the need for properly maintained tools, dust control equipment and the use of personal protective equipment.</p>
<p>Planning and Management</p> <ul style="list-style-type: none"> Product Design 	<ul style="list-style-type: none"> select, modify or design a faceplate and/or spindle-type product that incorporates three or more different types of cuts create a full-size pattern or template 	<p>It is recommended that students complete CONEQUIP-3: Wood Lathe Equipment Checklist prior to the use of this piece of equipment.</p>

MODULE CON1140: TURNING OPERATIONS (continued)

Concept	Specific Learner Expectations	Notes
<ul style="list-style-type: none"> • Estimating • Event Sequencing 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • prepare a material list and cost estimate • show a sequence of operations that facilitates the safe and efficient use of materials, tools and equipment • calculate the appropriate turning speeds using tables. 	<p>Demonstrate proper procedures and sequence of events to produce:</p> <ul style="list-style-type: none"> – straight and taper cuts – coves and Vs – beads and shoulders – concave and convex surface.
<p>Implementation</p> <ul style="list-style-type: none"> • Lathe Work 	<ul style="list-style-type: none"> • demonstrate the appropriate skills to: <ul style="list-style-type: none"> – prepare stock for turning – lay out and size a rough turning – rough cut and finish cut according to a predetermined pattern/template or free forming principles – sand and apply the recommended finish – remove and assemble finished product. 	<p>Discuss free forming principles used by artisans and the use of copy lathes and automated equipment used in industry.</p>
<p>Assessment</p> <ul style="list-style-type: none"> • Quality Control • Career Preparation 	<ul style="list-style-type: none"> • complete a visual inspection of a product to determine whether the structure is sound, surfaces are free of scratches, gouges, burns and voids • demonstrate efficient methods to improve quality and productivity • maintain a record of completed activities within a portfolio. 	

MODULE CON1160: MANUFACTURED MATERIALS

Level: Introductory

Theme: Manufacturing Systems (Processes and Applications)

Prerequisite: CON1010 Basic Tools & Materials

Module Description: Students select and use the appropriate materials and tools to build a product or structure from a wood composite or other manufactured material.

Module Parameters: Access to a materials work centre, complete with basic hand and power tools, and to instruction from an individual with specialized training in the use of power tools.

Supporting Module: CON1120 Project Management

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> identify and describe the characteristics of common manufactured materials demonstrate the safe use of a given hand and power tool 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> identification and description of a variety of common manufactured sheet materials. <p><i>Assessment Tool</i> <i>Response Assessment: Characteristics of Manufactured Materials, CON1160-1</i></p> <p><i>Standard</i> <i>The accurate identification and description of four different manufactured sheet products</i> <i>Response rating of 1</i></p>	15
	<ul style="list-style-type: none"> safe set-up, use and shut-down procedures related to the safe use of one or more stationary/portable power tools. <p><i>Assessment Tool</i> <i>Use the appropriate power tools performance check list such as:</i> <i>Equipment Checklist: Drill Press, CONEQUIP-1</i> <i>Equipment Checklist: Bandsaw, CONEQUIP-2</i></p> <p><i>Standard</i> <i>All procedures of operation are performed according to standard practice and specific recommendations of the equipment manufacturer</i></p>	15

MODULE CON1160: MANUFACTURED MATERIALS (continued)

Concept	Specific Learner Expectations	Notes
<ul style="list-style-type: none"> • Construction Processes • Tool Safety • Finishing 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe typical methods of constructing a product from a manufactured material; e.g.: <ul style="list-style-type: none"> – types of joints – fastening systems – edge treatments • identify the factors that determine the quality of a wood joint • describe the safe operation of hand and power tools to make dado, rabbet and miter joints in plywood and other manufactured materials • identify and describe common methods used to finish plywood and other wood substitutes. 	<p>Discuss how the type of joint affects the overall strength, usefulness and appearance of a product.</p> <p>Note the advantages of using KD (knock down) joints and hardware used in many of today's products.</p>
<p>Planning and Management</p>	<ul style="list-style-type: none"> • select or modify a plan for a project that incorporates basic joinery and edge treatment techniques • create a bill of materials, cutting list and event sequence. 	<p>Have students consider a project such as a:</p> <ul style="list-style-type: none"> • tool box • portable work bench • shelving unit • speaker enclosure • storage unit.
<p>Implementation</p> <ul style="list-style-type: none"> • Material Processing 	<ul style="list-style-type: none"> • use the appropriate tools, materials and processes to: <ul style="list-style-type: none"> – measure and lay out the components – cut to size and surface all edges – edge bond all exposed surfaces as required – machine the appropriate joints – assemble and clamp – attach the appropriate hardware – prepare for finishing – apply a suitable finish. 	<p>Discuss the importance of sizing all parts before laying out and cutting the joints.</p>

MODULE CON1160: MANUFACTURED MATERIALS (continued)

Concept	Specific Learner Expectations	Notes
Assessment <ul style="list-style-type: none"><li data-bbox="207 443 444 474">• Quality Control <li data-bbox="207 604 391 667">• Career Preparation	<i>The student should:</i> <ul style="list-style-type: none"><li data-bbox="488 449 1122 583">• conduct a visual inspection of components to see that the joints are tight fitting, surfaces are free of marks, edges are covered and finished appropriately <li data-bbox="488 604 1122 667">• maintain a record of completed activities within a portfolio.	

MODULE CON1180: MOLD MAKING & CASTING

Level: Introductory

Theme: Manufacturing Systems (Processes and Applications)

Prerequisite: CON1010 Basic Tools & Materials

Module Description: Students apply knowledge of casting and molding materials and processes to prepare a mold and produce a casting.

Module Parameters: Access to a materials work centre complete with molding and casting equipment.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> list and describe common materials and processes used in casting/molding 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> identification and description of common casting/molding materials and processes. <p><i>Assessment Tool</i> <i>Response Assessment: Characteristics of Casting/Molding Materials, CON1180-1</i></p> <p><i>Standard</i> <i>The accurate identification and description of three different casting materials such as clay slip, concrete and plastic</i> <i>Response rating of 1</i></p>	10
<ul style="list-style-type: none"> apply principles of pattern making to create a simple mold 	<ul style="list-style-type: none"> demonstration of pattern and mold-making skills to produce a simple pattern and mold. <p><i>Assessment Tool</i> <i>Assessment Framework: Project Assessment, CONPRO</i></p> <p><i>Standard</i> <i>Patterns or molds are made from the appropriate materials and allows for convenient pouring and extraction of the final product</i> <i>Performance rating of 1 for each applicable task</i></p>	45

MODULE CON1180: MOLD MAKING & CASTING (continued)

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> • cast and finish a product, using the appropriate skills, materials and processes • demonstrate basic competencies. 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> • demonstration of casting or molding skills to produce a simple molding or casting. <p><i>Assessment Tool</i> <i>Assessment Framework: Project Assessment, CONPRO</i></p> <p><i>Standard</i> <i>Casting/moldings should be free of voids; meet the stated specifications related to size, shape and quality of finish</i> <i>Performance rating of 1 for each applicable task</i></p> <ul style="list-style-type: none"> • observations of individual effort and interpersonal interaction during the learning process. <p><i>Assessment Tool</i> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p style="text-align: center;">45</p> <p style="text-align: center;">Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
<p>Orientation</p> <ul style="list-style-type: none"> • Casting and Molding 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify and describe materials used to cast/mold such as: <ul style="list-style-type: none"> – clay slip – concrete – polystyrene beads – plastisol – model metal • describe common processes of casting/molding clay, concrete and plastic • differentiate between hardening by cooling, curing and drying 	<p>Investigate process related to:</p> <ul style="list-style-type: none"> • slip casting • pre-cast concrete • injection molding • rotational molding • dip molding.

MODULE CON1180: MOLD MAKING &CASTING (continued)

Concept	Specific Learner Expectations	Notes
<ul style="list-style-type: none"> • Health and Safety • Pattern and Mold Making 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • identify and describe the health and safety hazards associated with heating plastic and firing ceramic products • describe the kinds of materials and methods that are used to make patterns and molds. 	<p>Ensure that there is adequate ventilation when heating plastic and firing ceramic materials.</p> <p>Discuss ethical issues related to copying existing products.</p>
<p>Planning and Management</p> <ul style="list-style-type: none"> • Mold Design • Casting and Molding 	<ul style="list-style-type: none"> • design or prepare a mold for a ceramic or plastic product • calculate the quantities of materials required to make a casting • prepare a detailed step-by-step set of procedures to make a cast or molded product • locate the necessary personal protective clothing and equipment for a specific casting/molding process • describe a plan of action in the event of an accident. 	<p>Students will need to consider ways to secure the mold, pour and extract the product.</p>
<p>Implementation</p> <ul style="list-style-type: none"> • Material Processing • Health and Safety 	<ul style="list-style-type: none"> • use the appropriate tools, materials and processes to: <ul style="list-style-type: none"> – make or prepare a mold – measure and mix quantities of materials – pour, cure and finish a cast and/or molded product • use the appropriate personal protective equipment. 	

MODULE CON1180: MOLD MAKING & CASTING (continued)

Concept	Specific Learner Expectations	Notes
<p>Assessment</p> <ul style="list-style-type: none"> • Quality Control • Career Information • Career Preparation 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe factors that affect the quality of a cast or molded product • list potential career opportunities related to casting and molding • maintain a record of completed activities within a portfolio. 	<p>Have students note that there is a very close relationship between the quality of a mold and the quality of the finished product.</p>