

## Build a Mitre Box

1 Curriculum Expectation <i>In this unit the student will demonstrate / practise the following:</i>	2 Activity -- What You Will Do in this Unit <b>DL-II: For students with higher abilities or, ideally, "for students who want to do more".</b>
B1.1 -- gather and use pertinent information	-research key properties of wood and how to inspect, prepare and work with salvaged wood parts -research fabrication techniques and design strategies for using scrap or salvaged wood flooring to make a picture frame and a mitre box
B1.2 -- plan and organize projects and related activities using a design process and appropriate methods and tools	-create, improve and follow a step-by-step fabrication procedure for making a picture frame and a mitre box <b>DL-II: These students should be expected to blend good ideas from a variety of possible construction strategies and procedures, thus resulting in an improved fabrication process for a more 'custom' picture frame and highly durable mitre box.</b>
B 2.3 -- produce hand-drafted and / or computer-based technical drawings of design solutions using standard drafting tools and conventions	-use a computer aided design application to make fully dimensioned drawings of each of the wooden parts of the picture frame and mitre box -produce a complete and accurate parts list <b>DL-II: Will probably want to use the assembly functionality of a 3D CAD application</b>
B3.1 -- use appropriate tools, equipment and materials to create design models and / or prototypes	-produce a picture frame of a marketable quality -development of hand skills will be stressed in this project because it is early in the course <b>DL-II: Perhaps make wooden pins from scrap and use these pins to add strength to the picture frame joints</b>
B3.2 -- use appropriate measuring methods and scales when creating models and prototypes	-the mitre box must be very accurately made so that it can render highly accurate results for a user -test a square for accuracy -use simple laws of geometry to lay out 90° and 45° angles
B3.3 -- assess models and / or prototypes on the basis of prescribed criteria	-judge the product against student-generated criteria including aesthetics, accurate dimensions, square-ness, flat-ness (no twist), strength, finish -for example, the class will agree on the allowable tolerances on linear dimensions
B4.2 -- report and reflect on their experience with the design process using a suitable oral and / or written format	<b>-write a research report regarding wood and fabrication of a wood product (see B1.1)</b> -write a requirements document which will form the basis of a test / assessment plan (see B3.3)
C1.2 -- describe and apply best practices for conserving energy and other resources during the design process	-re-use salvaged wood construction materials after a thorough inspection -use hand tools instead of power tools that draw 10 amps
D1.2 -- demonstrate an understanding of and follow personal and environmental health and safety procedures with respect to processes, materials, tools, equipment, and facilities throughout the design process and related activities (e.g., use protective equipment; set tool and equipment guards properly; ensure adequate ventilation and ergonomic seating and other workplace	-learn about, understand and appreciate some important principles of safety and working safely -know when to wear gloves and ear protection -in the shop wear safety glasses ALWAYS -know how to hold and practice using hand tools (saw, hammer, wood chisel) to prevent injury / damage -choose the right tool for the job (hand saw; wood chisel) -inspect a hand tool (saw, chisel, hammer, screwdriver) for safety problems before using it <b>-set up and operate a drill press</b> -tidy up your work space before you start using it -clean up your work space when you are finished using it

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<p>arrangements; follow safe operating procedures; keep work areas clean and organized; store materials and dispose of wastes properly).</p>	<p>-treat all tools with respect and keep them in their "known location"                      -activate the dust extraction system and adjust necessary dampers  <b>DL-H: Help enforce best practices for shop safety</b></p>
<p>D2.5 -- demonstrate an understanding of the work habits that are important for success in the technological design industry, as identified in the Ontario Skills Passport (e.g., working safely)</p>	<p>-be a proactive member of the shop safety team  <b>DL-H: Teach other students how to use a mitre box</b>  <b>DL-H: Focus on Working Safely, Organization, Reliability and Initiative</b>  <b>DL-H: Be a "working safely" leader</b></p>