

**COURSE FAB2120: FOUNDRY 2 (SPLIT PATTERN)****Level:** Intermediate**Theme:** Production Systems and Processes**Prerequisite:** FAB1120 Foundry 1 (One-piece Pattern)**Description:** Students expand their pattern making and foundry skills to produce split pattern molds and finished castings.**Parameters:** Access to a fabrication work centre complete with foundry equipment and supplies and to instruction from an individual with specialized training in foundry practices.**Curriculum and Assessment Standards**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> <li>describe the essential similarities and differences between a one-piece pattern and a split pattern</li> <li>describe and perform safe start-up and shut-down procedures for the operation of a foundry furnace</li> <li>demonstrate basic pattern making skills to make a split pattern</li> </ul>	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> <li>oral or written response that outlines the important similarities and differences between a one-piece pattern and mold and a split pattern and mold.</li> </ul> <p><i>Assessment Tool</i> <i>Response Assessment: Split Pattern and Mold Making, FAB2120-1</i></p> <p><i>Standard</i> <i>Response rating of 2</i></p>	10
	<ul style="list-style-type: none"> <li>demonstration of approved foundry furnace start-up and shut-down procedures and safe handling and pouring of molten metal</li> </ul>	15
	<ul style="list-style-type: none"> <li>successful completion of a simple split pattern.</li> </ul> <p><i>Assessment Tool</i> <i>Product Assessment: Pattern Work and Mold Making, FAB2120-2</i></p> <p><i>Standard</i> <i>The pattern should incorporate the appropriate allowance for shrinkage and sufficient draft to allow for easy extraction.</i> <i>Performance rating of 2 for each applicable task</i></p>	40

**COURSE FAB2120: FOUNDRY 2 (SPLIT PATTERN) (continued)**

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> <li>• apply sand casting principles and skills to make a casting from a split pattern</li> <li>• demonstrate basic competencies.</li> </ul>	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> <li>• successful completion of a mold and casting using a split pattern.</li> </ul> <p><i>Assessment Tool</i>  <i>Product Assessment: Pattern Work and Mold Making, FAB2120–2</i></p> <p><i>Standard</i>  <i>The mold should be appropriately vented gated and rammed. The casting should be clean and free of voids; removal of gates should not distract from the overall appearance of the product</i></p> <p><i>Performance rating of 2 for each applicable task</i></p> <ul style="list-style-type: none"> <li>• observations of individual effort and interpersonal interaction during the learning process.</li> </ul> <p><i>Assessment Tool</i>  <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>35</p> <p>Integrated throughout</p>

Concept	Specific Outcomes	Notes
<p>Orientation</p> <ul style="list-style-type: none"> <li>• Foundry Processes and Products</li> <li>• Pattern Making</li> </ul>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>• from a selection of cast objects, list those made from two-part patterns and identify the “parting-line” on each casting</li> <li>• describe the type of pattern used to make a mold for cylindrical/spherical objects</li> <li>• explain how a split pattern is aligned and why this is necessary</li> <li>• compare the shrinkage allowances for:               <ul style="list-style-type: none"> <li>– aluminium</li> <li>– brass</li> <li>– cast iron</li> </ul> </li> </ul>	<p>The same emphasis should be placed on pattern making as is placed on casting and finishing a product.</p>

**COURSE FAB2120: FOUNDRY 2 (SPLIT PATTERN) (continued)**

Concept	Specific Outcomes	Notes
<ul style="list-style-type: none"> <li>• Mold Making</li> <li>• Foundry Furnaces</li> </ul>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>• describe the correct use of foundry tools and equipment to make a mold from a two-part pattern</li> <li>• explain how the two parts of the mold are aligned correctly</li> <li>• list and describe common foundry furnaces and accessories</li> <li>• identify safe start-up and shut-down procedures for a given furnace.</li> </ul>	<p>Demonstrate how to safely start up and shut-down a foundry furnace.</p>
<p>Planning and Management</p> <ul style="list-style-type: none"> <li>• Heating and Pouring</li> <li>• Health and Safety</li> </ul>	<ul style="list-style-type: none"> <li>• describe the correct pouring temperature for both aluminium alloy and lead-based alloys</li> <li>• identify appropriate fluxes to be used with the melting process</li> <li>• identify the dangers relating to:               <ul style="list-style-type: none"> <li>– handling ceramic crucibles</li> <li>– moisture in contact with molten metal</li> <li>– metals splashing</li> <li>– molds incorrectly vented</li> <li>– metal escape if mating flask surfaces are damaged</li> <li>– water as a sand binder</li> <li>– fumes from metal, fluxing and binders</li> <li>– common foundry practices to avoid injury in all of the above</li> </ul> </li> <li>• describe a safety plan in case of accident.</li> </ul>	
<p>Implementation</p> <ul style="list-style-type: none"> <li>• Material Processing</li> </ul>	<ul style="list-style-type: none"> <li>• use the appropriate tools, materials and processes to:               <ul style="list-style-type: none"> <li>– construct a split pattern</li> <li>– create a sand mold</li> <li>– pour</li> <li>– cool</li> <li>– remove flash, gates and runners</li> <li>– finish a sand casting.</li> </ul> </li> </ul>	

**COURSE FAB2120: FOUNDRY 2 (SPLIT PATTERN) (continued)**

Concept	Specific Outcomes	Notes
Assessment <ul style="list-style-type: none"><li data-bbox="207 447 443 478">• Quality Control</li><li data-bbox="207 531 391 594">• Career Preparation</li></ul>	<i>The student should:</i> <ul style="list-style-type: none"><li data-bbox="488 447 1125 510">• identify the cause of porosity in a casting and take appropriate measures to correct the problem</li><li data-bbox="488 531 1101 594">• prepare a record of completed activities within a portfolio.</li></ul>	