

**COURSE FAB2100: SHEET FABRICATION 3 (PARALLEL LINE)****Level:** Intermediate**Theme:** Fabrication Processes**Prerequisite:** FAB2090 Sheet Fabrication 2 (Machine Processes)**Description:** Students expand sheet metal skills related to pattern making, seam constructing and edge treating.**Parameters:** Access to a fabrication work centre complete with basic sheet forming and fastening tools and to instruction from an individual with specialized training in sheet metal 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 and give examples of parallel line developments</li> <li>• create a parallel line development, using standard drawing and layout practices</li> <li>• apply sheet metal fabrication principles skills to fabricate a product, using parallel line development</li> </ul> | <p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> <li>• correct description and identification of three sheet metal products that are made using parallel line developments</li> <li>• use of approved drawing practices to develop parallel line developments that can be used to produce products from light gauge sheet stock</li> <li>• the accurate layout and fabrication of a sheet metal product that uses one or more seams and edge treatments.</li> </ul> <p><i>Assessment Tool</i><br/> <i>Product Assessment: Parallel Line Developments, FAB2100-1</i></p> <p><i>Standard</i><br/> <i>The product should be structurally sound and free of surface blemishes; seams and hems should be tight fitting and appropriate. Overall dimensions should meet design specifications</i><br/> <i>Performance rating of 2 for each applicable task</i></p> | <p>15</p> <p>25</p> <p>60</p> |

**COURSE FAB2100: SHEET FABRICATION 3 (PARALLEL LINE)** (continued)

| General Outcomes  | Assessment Criteria and Conditions   | Suggested Emphasis           |
|---|--|------------------------------|
| <p><i>The student will:</i></p> <ul style="list-style-type: none"> <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>observations of individual effort and interpersonal interaction during the learning process.</li> </ul> <p><i>Assessment Tool</i><br/> <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p> | <p>Integrated throughout</p> |

| Concept  | Specific Outcomes   | Notes   |
|--|---|---|
| <p>Orientation</p> <ul style="list-style-type: none"> <li>Health and Safety</li> <li>Pattern Development</li> <li>Pattern Types</li> <li>Hems and Edges</li> </ul> | <p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>describe: <ul style="list-style-type: none"> <li>the use of appropriate personal protective equipment</li> <li>proper storage of consumables</li> <li>a safety plan in case of accident</li> </ul> </li> <li>explain how to provide adequate air quality for welding, soldering and finishing</li> <li>list and describe the following pattern developments: <ul style="list-style-type: none"> <li>parallel line</li> <li>radial line</li> <li>triangulations</li> </ul> </li> <li>explain the use of: <ul style="list-style-type: none"> <li>full patterns</li> <li>half patterns</li> <li>pierced patterns</li> </ul> </li> <li>identify and describe the purpose of a: <ul style="list-style-type: none"> <li>standing edge</li> <li>single hem</li> <li>double hem</li> <li>wired edge</li> </ul> </li> <li>describe how to calculate the material allowance for a wire edge</li> </ul> | <p>Provide examples of products that are developed through straight, parallel, radial line and triangulation.</p> |

**COURSE FAB2100: SHEET FABRICATION 3 (PARALLEL LINE) (continued)**

| Concept   | Specific Outcomes   | Notes   |
|---|---|---|
| <ul style="list-style-type: none"> <li>• Seams</li> <li>• Shearing</li> <li>• Soft Soldering</li> <li>• Other Fastening Techniques</li> </ul> | <p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>• identify and describe the use of the following seams:               <ul style="list-style-type: none"> <li>– plain lap and flush lap</li> <li>– inside and outside lap</li> <li>– single and double seam</li> <li>– grooved joint</li> <li>– Pittsburgh lock</li> </ul> </li> <li>• explain how and when to use:               <ul style="list-style-type: none"> <li>– combination, straight and aviation snips</li> <li>– notcher</li> <li>– squaring shears</li> </ul> </li> <li>• describe how to forge and tin solder coppers</li> <li>• select the appropriate flux for ferrous and nonferrous applications</li> <li>• explain how to sweat solder lap, single- and double-seamed joints</li> <li>• explain when it is appropriate to use:               <ul style="list-style-type: none"> <li>– spot welders</li> <li>– solid rivets</li> <li>– pop rivets.</li> </ul> </li> </ul> |   |
| <p>Planning and Management</p> <ul style="list-style-type: none"> <li>• Pattern Development</li> <li>• Operation Sequencing</li> </ul>        | <ul style="list-style-type: none"> <li>• calculate the material allowance for:               <ul style="list-style-type: none"> <li>– double and single seam</li> <li>– Pittsburgh lock</li> </ul> </li> <li>• prepare a parallel line development</li> <li>• create a systematic sequence of operations to fabricate a parallel line product.</li> </ul>   | <p>Students without a background in drafting may require extra assistance to prepare a pattern.</p> |
| <p>Implementation</p> <ul style="list-style-type: none"> <li>• Material Processing and Fabrication</li> </ul>                                 | <ul style="list-style-type: none"> <li>• demonstrate basic sheet metal process and fabrication skills related to specific seam and edge treatments and fastening techniques.</li> </ul>   | <p>Consider having students build a hinged tool box or carryall.</p>                                |

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| Concept  | Specific Outcomes  | Notes   |
|--|--|---|
| <p>Assessment</p> <ul style="list-style-type: none"><li>• Quality Control</li><li>• Career Preparation</li></ul> | <p><i>The student should:</i></p> <ul style="list-style-type: none"><li>• list criteria to assess a sheet metal product and apply it to the evaluation of a completed product</li><li>• prepare a record of completed activities within a portfolio.</li></ul> | <p>Consider such factors as product design, usefulness, durability and overall workmanship.</p> |