

## 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"> <li>list and describe common materials and processes used in casting/molding</li> </ul>	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> <li>identification and description of common casting/molding materials and processes.</li> </ul> <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"> <li>apply principles of pattern making to create a simple mold</li> </ul>	<ul style="list-style-type: none"> <li>demonstration of pattern and mold-making skills to produce a simple pattern and mold.</li> </ul> <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"> <li>• cast and finish a product, using the appropriate skills, materials and processes</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>• demonstration of casting or molding skills to produce a simple molding or casting.</li> </ul> <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"> <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 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"> <li>• Casting and Molding</li> </ul>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>• identify and describe materials used to cast/mold such as: <ul style="list-style-type: none"> <li>– clay slip</li> <li>– concrete</li> <li>– polystyrene beads</li> <li>– plastisol</li> <li>– model metal</li> </ul> </li> <li>• describe common processes of casting/molding clay, concrete and plastic</li> <li>• differentiate between hardening by cooling, curing and drying</li> </ul>	<p>Investigate process related to:</p> <ul style="list-style-type: none"> <li>• slip casting</li> <li>• pre-cast concrete</li> <li>• injection molding</li> <li>• rotational molding</li> <li>• dip molding.</li> </ul>

**MODULE CON1180: MOLD MAKING &CASTING** (continued)

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

**MODULE CON1180: MOLD MAKING & CASTING** (continued)

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