

COURSE FAB2048: FLUX CORE ARC WELDING 1**Level:** Intermediate**Theme:** Fabrication Processes**Prerequisite:** FAB1048 Semi-automated/Automated Welding**Description:** Students develop an understanding of the advantages and disadvantages of flux core arc welding (FCAW) processes, and gain experience using FCAW processes by performing flat, horizontal and vertical fillet welds and flat groove welds.**Parameters:** Access to a fabrication work centre complete with flux core arc welding (FCAW) equipment and supplies, and to instruction from an individual with formal, specialized training in arc welding 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"> outline the advantages and disadvantages of FCAW processes versus other forms of arc welding processes describe the characteristics of a desirable flux core arc weld 	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> a written or oral presentation that outlines four advantages of FCAW processes over other forms of arc welding processes <p><i>Assessment Tool</i> <i>Presentations/Reports: Advantages of Flux Core Arc Welding, FAB2048-1</i></p> <p><i>Standard</i> <i>Performance rating of 2 for each applicable task</i></p>	10
	<ul style="list-style-type: none"> identification and description of five visual characteristics of a weld that meets trade standards <p><i>Assessment Tool</i> <i>Fabrication Process: Fillet and Butt Welding on Mild Steel, FAB2048-2</i></p> <p><i>Illustrative Examples:</i> <i>Flat Tee Fillet Weld, FAB2048-4</i> <i>Horizontal Tee Fillet Weld, FAB2048-5</i> <i>Vertical Tee Fillet Weld, FAB2048-6</i> <i>Flat Single Vee Butt Joint Weld, FAB2048-7</i></p> <p><i>Standard</i> <i>Performance rating of 3 for each applicable task</i></p>	10

COURSE FAB2048: FLUX CORE ARC WELDING 1 (continued)

Concept	Specific Outcomes	Notes
<p>Orientation</p> <ul style="list-style-type: none"> • Health and Safety • FCAW Variables • Weld Quality 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • describe safety issues related to: <ul style="list-style-type: none"> – the use of personal protective equipment – handling and storage of consumables – keeping the welding area free of hazards – insuring adequate ventilation • describe a safety plan in case of accident • identify the advantages and disadvantages of FCAW processes as compared to other arc welding processes • identify the variables that can directly affect weld quality; i.e.: <ul style="list-style-type: none"> – the welding current and voltage – modes of metal transfer; e.g.: <ul style="list-style-type: none"> • short arc • globular • spray arc – diameter and type of filler metal – type and condition of equipment – welding technique; e.g.: <ul style="list-style-type: none"> • forehand or pushing • backhand or pulling • identify possible causes of welding defects; e.g.: <ul style="list-style-type: none"> – surface porosity – subsurface porosity – lack of fusion – burn through – lack of penetration – coldlapping • identify problems common to out of position welding 	<p>Demonstrate forehand and backhand welding techniques.</p>

COURSE FAB2048: FLUX CORE ARC WELDING 1 (continued)

Concept	Specific Outcomes	Notes
<p>Planning and Management</p> <ul style="list-style-type: none"> • Equipment Set-up • Preparation • Equipment Maintenance 	<p><i>The student should:</i></p> <ul style="list-style-type: none"> • apply safe work practices and procedures: <ul style="list-style-type: none"> – select and use appropriate personal protective equipment – maintain a clean and tidy work station – demonstrate safe tool/material handling and storage techniques • for a given type of weld and/or weldment, select the appropriate: <ul style="list-style-type: none"> – wire type, size and feed rate – current – shielding gas type and flow rate • prepare and clean all surfaces to be welded • properly position metal for welding • describe and demonstrate the maintenance required for wire drive systems and gun assemblies 	
<p>Implementation</p> <ul style="list-style-type: none"> • Flux Core Arc Welding 	<ul style="list-style-type: none"> • demonstrate safe FCAW techniques and perform fillet welds in the flat, horizontal and vertical positions on mild steel plate • demonstrate safe FCAW techniques and perform groove welds in the flat position on mild steel plate 	
<p>Assessment</p> <ul style="list-style-type: none"> • Quality Control • Career Preparation 	<ul style="list-style-type: none"> • complete a visual inspection (i.e., non-destructive test) by observing and assessing: <ul style="list-style-type: none"> – overall size, shape and appearance of the beads – plate penetration – fusion – degree of undercutting and overlapping • perform a destructive test where appropriate • prepare a record of completed activities within a portfolio 	