

WE119
Wire Process Lab
4 Credits

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WE119 Version: 3



Wire Process Lab

Calendar Description

This course follows the Alberta Apprenticeship and Industry Training Welder Curriculum. This introductory lab based course allows students to develop hand skills in Gas Metal Arc Welding, Flux Core Arc Welding and Metal Core Arc Welding. Students are expected to adhere to all Occupational Health and Safety rules and regulations while in the lab facility.

Rationale

This is a required course for Pre-employment Welding students. Pre-employment programs provide students with an opportunity to obtain both practical and theoretical experience in a trade and thus an avenue of entry into the workforce.

Prerequisites

None

Co-Requisites

MA116, SA120, WE115, WE117, WE118, and WE135

Course Learning Outcomes

Upon successful completion of this course, students will be able to

A-E. Perform fillet and groove welds on mild steel.

1. Weld stringer and weave beads in the flat and horizontal positions.
2. Weld in the 1F, 2F and 3F positions.
3. Weld in the 1G, 2G, 3G and 4G positions.
4. Weld a 1GR.
5. Use CWB test procedures.
6. Weld the 1GF, 2G, 3GF and 4GF joint configurations with a 1/4" backing plate.
7. Weld on structural shapes.

B-F Perform FCAW and MCAW operations in multiple positions.

1. Weld stringer and weave beads in the flat and horizontal positions on mild steel plate.
2. Weld in the 1F, 2F and 3F positions using the FCAW process.
3. Weld using the MCAW process.
4. Use CWB testing procedures.
5. Weld in the 1GF, 2G, 3GF and 4GF joint configurations using the FCAW process with a 1/4" backing plate.
6. Weld on structural shapes.

C-G Perform GMAW, FCAW and MCAW welds on mild steel.

1. Weld butt joints in the 1G, 2G and 3G positions on mild steel using GMAW for the root bead and FCAW or MCAW fill and cap.
2. Weld with MCAW on various joint configurations.

D-I Perform welds on aluminum.

1. Weld stringer/weave beads in the flat and horizontal positions on 3.2 mm (1/8") or greater aluminum material.
2. Weld in the 1F, 2F, and 3F on 3.2 mm (1/8") or greater aluminum material.

E-J Perform GMAW, FCAW and MCAW on mild steel pipe.

1. Weld in the 2G position on pipe using GMAW.
2. Weld in the 1G-rotated position on pipe using a GMAW root pass and FCAW or MCAW fill and cap.
3. Weld in the 2G position on pipe using GMAW root pass and FCAW fill and cap.
4. Weld with GMAW in the 5G position on pipe root pass downhill, fill and cap uphill.

Resource Materials

Modules for First Period Welder program from Alberta Learning, Apprenticeship and Industry Training Division.

120103E, 120103F, 120103G, 120103I and 120103J

Required Lab Material:

1. Protective apparel – cotton coveralls/ carhart
2. One pair leather welder's gloves (gauntlet type)
3. One welder's hat or beanie
4. One lock
5. Approved safety glasses (compulsory) or prescription glasses, hardexed or plastic complete with side shields

6. Welding helmet, and extra dark and clear lenses
7. Mig pliers
8. Pliers (slip-joint or vice grip)
9. CSA approved safety steel toe boots
10. Soap stone
11. Tip cleaners
12. File (Pipe liner) 14"

Conduct of Course

Practical skills are learned through interactive lab exercises designed to provide the student with hands-on learning of theory topics. Students participate in weekly lab assessments to evaluate their welding techniques. The instructor is available for individual and/or group help during class.

Lakeland College is committed to the highest academic standards. Students are expected to be familiar with Lakeland College lab policies and to maintain respect for shop equipment and environment and to abide by these policies. Violations of these policies are considered to be serious and may result in suspension or expulsion from the College.

Evaluation Procedures

At the end of each week students are expected to perform a series of practical welding and cutting skills on plate steel, which will be evaluated by professional experienced welding staff. Each lab project is scored out of 100% and the reasons for deductions are communicated to the students so they can improve and advance their welding and cutting techniques. At the end of the course a minimum passing grade of 65% is required in the lab practices to challenge the Alberta Apprenticeship and Industry Training practical examination.

Grade Equivalents and Course Pass Requirements

A minimum grade of C+ is required to pass this course.

Letter	F	C+	B-	B	B+	A-	A	A+
Percent Range	0-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100
Points	0.00	2.30	2.70	3.00	3.30	3.70	4.00	4.0

Attendance

Regular attendance is essential for success in any course. Absence for any reason does not relieve a student of the responsibility of completing course work and assignments to the satisfaction of the instructor. Poor attendance may result in the termination of a student from a

course. The instructor will recommend that any student who does not meet the established attendance requirements to withdraw from the course. In cases of repeated absences due to illness, the student may be requested to submit a medical certificate. Students that miss a total of 27 hours within the duration of the pre-employment program, will be scheduled to appear before the college chair to review their status, at which time dismissal from the program may be an option. Instructors have the authority to require attendance at classes.

Course Units/Topics

Section III

Module – 120103e – GMAW on Mild Steel

Module – 120103f – FCAW and MCAW on Mild Steel

Module – 120103g – GMAW, FCAW and MCAW on Mild Steel

Module – 120103i – GMAW on Aluminum

Module – 120103j – GMAW, FCAW, and MCAW on mild steel pipe



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