

WE115
Workplace Safety & Tools
2 Credits

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WE115 Version: 3



Workplace Safety & Tools

Calendar Description

This course follows the Alberta Apprenticeship and Industry Training Welder Curriculum. This course is designed to introduce students to the welding theory of Industry Safety and Tools. The many hazards associated with welding make it essential for students to be knowledgeable about safe welding procedures and practices.

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, WE117, WE118, WE119, and WE135

Course Learning Outcomes

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

- A. **describe legislation, regulations and practices intended to ensure a safe work place in this trade.**
 1. demonstrate the ability to apply the Occupational Health and Safety Act, Regulation and Code.
 2. explain the role of the employer and employee in regard to Occupational Health and Safety (OHS) regulations, Worksite Hazardous Materials Information Systems (WHMIS), fire regulations, Workers Compensation Board regulations, and related advisory bodies and agencies.
 3. explain industry practices for hazard assessment and control procedures.
 4. describe the responsibilities of workers and employers to apply emergency procedures.

5. describe positive tradesperson attitudes with respect to housekeeping, personal protective equipment and emergency procedures.
 6. describe the roles and responsibilities of employers and employees with respect to the selection and use of personal protective equipment (PPE).
 7. select, use and maintain appropriate PPE for worksite applications.
- B. describe the use of personal protective equipment (PPE) and safe practices for climbing, lifting, rigging and hoisting in this trade.**
1. select, use and maintain specialized PPE for climbing, lifting and load moving equipment.
 2. describe manual lifting procedures using correct body mechanics.
 3. describe rigging hardware and the safety factor associated with each item.
 4. select the correct equipment for rigging typical loads.
 5. describe hoisting and load moving procedures.
- C. describe the safety practices for hazardous materials and fire protection in this trade.**
1. describe the roles, responsibilities features and practices related to the workplace hazardous materials information system (WHMIS) program.
 2. describe the three key elements of WHMIS.
 3. describe handling, storing and transporting procedures when dealing with hazardous material.
 4. describe safe venting procedures when working with hazardous materials.
 5. describe fire hazards, classes, procedures and equipment related to fire protection.
- D. describe the role of the Alberta Apprenticeship and Industry Training Board and the network of industry committees that represent the trades and occupations in Alberta.**
1. describe Alberta's apprenticeship and industry training system.
 2. describe the roles and responsibilities of the Alberta Apprenticeship and Industry Training Board, government and post-secondary institutions.
 3. describe the roles and responsibilities of the PAC'S, LAC'S and occupational committees.
- E. apply safe work practices according to Occupational Health and Safety Act (OHS) legislation.**
1. identify hazards for welding and cutting operations.
 2. identify the use of personal protective equipment for welding and cutting operations.
 3. explain the hazards involved with welding fumes and gases.
 4. identify welding fume ventilation methods.
 5. explain the effects of electricity and precautions used to prevent injury.
 6. describe the procedure for welding or cutting in confined spaces or potentially dangerous enclosures.
 7. interpret sections of the Occupational Health and Safety Act, general safety regulations.
- F. use hand tools.**
1. describe safety precautions for hand tools.
 2. identify the layout and measuring tools and their uses.
 3. identify clamping tools and their uses.

4. identify cutting tools and their uses.
 5. identify the other hand tools used by welders.
- G. use power tools.**
1. demonstrate the operation of bench, pedestal, angle and straight grinders.
 2. demonstrate the operation of portable power drills, drill presses and twist drills.
 3. describe the operation of metal forming and shaping tools.
 4. describe the operation for metal cutting tools.
 5. describe the use of power positioners.
- H. assemble oxyfuel equipment.**
1. describe the characteristics and handling procedures for oxygen and fuel gases.
 2. describe the functions of oxyfuel equipment components.
 3. demonstrate the use, care and maintenance of oxyfuel equipment components.
 4. explain the procedure for placement, set-up and shutting down of oxyfuel equipment.
 5. identify causes and preventive measures for backfires, flashbacks and burn backs.
 6. describe pressure and flame adjustments.
- I. perform oxyfuel cutting.**
1. describe how to operate a hand-held oxyfuel cutting torch on mild steel plate and structural shapes.
 2. perform straight line, bevel, and shape cutting on mild steel.
 3. pierce and cut holes in mild steel plate.
 4. cope 3/8" mild steel to fit a 100 mm (4") C shape.
 5. perform cuts on structural shapes.
 6. operate a machine oxyfuel cutting torch on mild steel plate and pipe.
- J. cut and gouge using the plasma arc and carbon arc cutting processes.**
1. describe the plasma arc cutting process and equipment.
 2. observe plasma arc cutting.
 3. describe the carbon arc cutting process.
 4. gouge using the carbon arc cutting process.
- K. apply materials handling procedures.**
1. identify procedures for handling and storing materials.
 2. determine weight and centre of gravity of loads.
 3. identify the load limits of wire rope and synthetic slings.
 4. describe the use of plate clamps and cable clips.

Resource Materials

Required Text(s):

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

120101A, 120101B, 120101C, 120101D, 120101E, 120101F, 120101G, 120101H, 120101I, 120101J and 120101K.

Conduct of Course

Workplace Safety and Tools consists of 50 hours of interactive learning within specific modules, utilizing power point presentations, smart board technology; as well as numerous props that are used to support the literature discussed. Specific objectives are stated in each class and information resulting from the lectures is introduced and further enhanced while performing practical shop assignments. Students are given the opportunity to complete a variety of exercises and evaluations to assist in learning. The instructor is available for individual and/or group help during class and scheduled office hours.

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

Students are expected to complete multiple choice exams after the completion of each module lectured. At the conclusion of this section, a final evaluation will be issued and consist of 50% of the final mark for Welding Technology. Students are required to have a 65% passing grade at the end of the 4th week of attendance to continue on in the program. At the conclusion of the course, a minimum of 65% average is required to write the 1st period Apprenticeship & Industry Training exam.

Module Exams	50%
Final Exam	50%

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 I

Module – 120101a – Safety Legislation, Regulations and Industry Policy in the Trade

Module – 120101b – Climbing, Lifting, Rigging and Hoisting

Module – 120101c – Hazardous Materials and Fire Protection

Module – 120101d – Alberta Industry Network

Module – 120101e – Welding Safety

Module – 120101f – Hand Tools

Module – 120101g – Power Tools

Module – 120101h – Oxy-Fuel Equipment

Module – 120101i – Oxy-Fuel Cutting

Module – 120101j – Plasma Arc Cutting and Gouging

Module – 120101k – Materials Handling



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