

- COURSE DESCRIPTION:** This curriculum has been designed to provide clients with an introductory level of theoretical knowledge and practical(hands on) skill related to the safe use and operation of typical Shielded Metal Arc welding equipment.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. ***Demonstrate in both the written form and by means of practical shop assignments, a sound working knowledge of both personal and shop safety.***

Potential Elements of the Performance:

- identify proper work boots, gloves and eye protection
- identify recommended fabrics and materials for personal protective clothing
- identify and select proper shades of welding lens
- identify, select and adjust welding helmets for proper fit and vision
- locate and identify shop lighting and ventilation switches
- locate and identify emergency exits
- understand procedures for evacuation of shop areas in the case of emergencies

2. ***Demonstrate in both the written form and by means of practical shop assignments a sound working knowledge of how to set up and operate a typical SMAW workstation.***

Potential Elements of the Performance:

- identify and select electrodes according to AWS / CSA number classification and size
- identify techniques for adjusting both welding current and polarity
- perform a routine inspection of assigned workstations in order to determine the condition of electrode holder, cables and related equipment
- report and / or correct deficiencies prior to the commencement of work
- demonstrate proper techniques for arc ignition, electrode angle and travel speed
- produce trial beads in order to verify the accuracy of initial machine settings
- re-adjust settings in order to produce sound welds

3. ***Demonstrate in both the written form and by means of practical shop assignments a sound working knowledge of how to perform basic SMAW procedures as well as identify and correct weld defects .***

Potential Elements of the Performance:

- describe potential fire, fume and explosion hazards associated to the use and operation of SMAW equipment
- identify and explain limited repair and service procedures for electrode holders and cables
- perform appropriate adjustments to SMAW equipment specific to the demands of various welding exercises
- identify the following common weld defects and / or problems
 - Arc Blow
 - Distortion
 - Porosity
 - Slag inclusions
 - L / O Fusion
 - L / O Penetration
 - Undercut
- adjust / correct welding parameters to eliminate the above defects and problems.

III. TOPICS:

1. Personal and Shop Safety
2. Set up and Operation of a typical SMAW Workstation
3. Basic SMAW Procedures
4. Weld Problems and Defects

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- CSA Approved (Impact Resistant) Safety Glasses
- CSA Approved (8 inch High Cut) Safety Work Boots
- CSA Approved (Gauntlet Type) Welding Gloves
- Appropriate Work Wear (see Welding Shop Guidelines)
- Pocket Note-pad (for Shop Demonstrations and Discussion)
- Text: Principles of Industrial Welding

V. EVALUATION PROCESS/GRADING SYSTEM:

The final mark for welding will be calculated by means of the following weighted factors.

- Theory Test 50 %
- Reading Assignments 25 %
- Shop Assignments 25 %

The following semester grades will be assigned.

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

VI. SPECIAL NOTES:**Special Needs:**

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office. Visit Room E1101 or call Extension 493 so that support services can be arranged for you.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

Late Assignments and Tests

All scheduled theory tests / assignments and shop assignments / tests are due on the day and at the time specified. Failure to hand them in by the specified due date will result in an automatic 'F' grade for the said test or assignment.

The only exception to the above rule will be those due to serious personal illness or family crisis and the student supplies a signed, written statement to that effect. If a rescheduling of the event is deemed appropriate by the course professor it will be rescheduled at the convenience of the course professor.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.