

1992F

WLDO1  
DOC. #461

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: WELDING SMAW - GENERAL PRACTICES

CODE NO: WLDO1 SEMESTER: 1992F

PROGRAM: CONTINUING EDUCATION

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DATE: SEPTEMBER 1992 PREVIOUS OUTLINE DATED: OCTOBER 19 91

APPROVED:  
Dean, School of Technical Trades Date

COURSE NAME:     **WELDING SMAW - GENERAL PRACTICES**     TOTAL HOURS:     **60**

**PREREQUISITE(S):**

Certificate of Apprenticeship of Certificate of Qualification

**I. PHILOSOPHY/GOALS:**

This course is designed to upgrade any journeyman who may be required to perform welding tasks as part of job duties. Carpenters, electricians, auto mechanics are just a few examples of journeyman who will benefit from this course

**II. STUDENT PERFORMANCE OBJECTIVES:**

Upon completion of this course the student will understand the basic knowledge of arc welding equipment and how to use it safely. The student will successfully be able to make fillet welds in the flat (horizontal) position.

**III. TOPICS TO BE COVERED:**

Shop safety  
Types of welding machines  
Welding practices  
Selection of filler metals  
Weld faults  
Oxy fuel flame cutting  
CWB testing procedures

**IV. LEARNING ACTIVITIES:**

**1. A. INTRODUCTION TO PROGRAM**

- objectives of course
- assessment

Scope of arc welding

- manual, semi-automatic, automatic processes

**B. PERSONAL AND SHOP SAFETY**

- clothing, gloves, helmet, lenses
- electrical hazards
- importance of electrical connections

## **MAINTENANCE OF SHOP AND ACCESSORIES**

- care of booth, positioners, table
- clean-up
- care of holder, helmets, gloves
- electrode use and storage
- material use and storage

### **A. TYPES OF WELDING MACHINES**

- transformer
- transformer/rectifier
- generator
- cost, maintenance of machines
- advantages and disadvantages

### **B. CURRENT ADJUSTMENTS**

- coarse and fine adjustments
- standard and remote
- current and polarity
- concept of polarity
- quick disconnect couplers

## **ELECTRICAL PRINCIPLES**

- copy the face plate of a welding machine; input, output, phase
- definition of ampere, volt, ohm, duty cycle, OCV

## **4. A. WELDING PRACTICES**

- beads: 1/8 E6011; AC  
1/8 E6013; AC  
3/32 E7024; AC  
1/8 E7018; DC+; AC

## **B. WEAVES (PAD): 1/4 PLATE 3" X 6"**

- 1/8 E6011
  - 1 plate
- 1/8 E7024
  - 1 plate; both sides
  - fillet welds: IF; 1/4" plate
- i) - Rootpass 1/8 E6011  
Remainder 5/32 E6011
- ii) - Rootpass 1/8 E6010  
Remainder 5/32 E6010
- iii) - Rootpass 1/8 E7024  
Remainder 1/8 E7024
- iv) - Rootpass 1/8 E7018  
Remainder 1/8 E7018

- v) - 2F; single pass and multipass welds for more advanced students

Selection of filler metals:

- AWS; CSA classification
- imperial and metric sizes
- operating characteristics of E6010, E6011, E6013, E7024, E7018

#### **WELDING TERMS AND DEFINITIONS**

fillet weld terms  
groove weld terms  
layers and passes  
weld sizes, shapes  
types of welds and joints

#### **6. WELD FAULTS**

overlap, undercut  
lack of fusion and penetration  
porosity, external and internal  
underbead cracking  
arc blow

#### **CUTTING PRACTICES : SCOPE**

manual straight line cutting with and without guide bar  
bevel cutting, mitre cutting  
piercing  
cutting of round stock, pipe, structural bar  
gouging

#### **CWB TESTING**

flat position

#### **V. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE, ETC.)**

The following grades will be assigned to students in Continuing Education Post-Secondary courses:

A+ = 90-100%	Consistently outstanding
A = 80-89%	Outstanding achievement
B = 70-79%	Consistently above average achievement
C = 60-69%	Satisfactory or acceptable achievement
R = Repeat	The student has not achieved objectives of course and must repeat the course

#### **VI. REQUIRED STUDENT RESOURCES**

Learning Guide - **Intermediate and Advanced SMAW**  
(to be supplied by course instructor)