SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: WELDING SMAW - GENERAL PRACTICES

CODE NO: WLDOL SEMESTER: 1992F

PROGRAM: CONTINUING EDUCATION

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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 of 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 safety. 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

2. 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)