#178/

SAULT COLLEGE OF APPLIED ARTS *h* TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: WELDING

Code No.: MET621-3

Program: STEAMFITTING APPRENTICE - BASIC

Semester:

Date: 1989 05 19

Author: Bob Senechal

New: Revision XX

APPROVED Chairperson

Jt&f&h

WELDING MET621-3

Course Name **Course Number**

PHILOSOPHT/GOALS:

This course stresses safe handling of oxy-acetylene welding and cutting equipment. In addition to fusion and non-fusion welding practices, students will learn to set-up and practice welding of small diameter pipe.

METHODS OF ASSESSMENT (GRADING METHOD):

MARKING SYSTEM

A -- 85%
B -- 75% - 84%
C -- 60% - 74%
D -- 50% - 59%
F -- Repeat

1 Theory Test	-	30%
Skill Evaluation	-	60%
Attendance/Attitude	-	10%
TOTAL	-	100%

Instructors should provide marks in percentage. A mark of "D" must be balanced with a "B" (in another subject if necessary) to obtain a passing grade of "C" - average.
Instructors should try for a class average of between 70 - 75%.

The instructor will determine which practical exercises will be used for grading.

TEXTBOOK(S):

I.A.S.(Ins truetion Aid Sheets) and notes.
Students should be given a copy of the course outline.

OBJECTIVES:

The basic objectives are that the student becomes proficient in cutting and joints. An understanding of welding principles as related to his trade.

The student should realize that all objectives may not necessarily be reached due to time constraints.

SUMMARY - STEAHFITTING APPRENTICE - BASIC

TOPIC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
	T-THEORY L-LAB		
la	1/2T	Orientation to program.	I.A.S.#1
b		Introduction to O.A.W.	
2a	1/2T	Assembling and handling of equipment.	Notes/Demo
b		Construction of equipment.	Notes/Demo
c		Repairstoacessories.	Demo
d		Types of oxy-acetylene flames and fuel mixtures.	I.A.S.#2
e		Welding terms, positions, joints.	I.A.S.#3
f		Filler metals and their selection.	Notes
g		Weld faults.	I.A.S.#4
3	6L	Fusion welding practices of mild steel.	Demo
4	1/2T,9L	Pipe welding.	I.A.S.I5 Demo
5	4L	Non-fusion welding.	I.A.S.#6 Demo
6	3L	Cutting.	I.A.S.#7 Demo
7	1/2T	Written test.	
TOTAL HRS.	2T, 22L	- 8 WEEKS	

TOPIC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
	T-THEORY L-LAB		
la	1/2T	Orientation to program. - outline of topics to be covered - method of evaluation - testing modes, dates - shop safety and regulations - personal safety - repair of shop equipment Introduction to O.A.W. - Scope: fusion non-fusion cutting heating	I.A.S.#1
2a	1/2T	Assembling and handling of equipment. - assemble and disassemble hoses, regulators, torches, tips - identify and change "0" rings - adjust goggles, strikers - transport velding cylinders and cart	Notes/Demo
		Construction of equipment. - study cross-section of cylinders - location of safety devices - identification and marking of cylinders	Notes/Demo
		Repairs to accessories. - hose splicing, crimping tools, hose diameters	Demo
		Types of O.A. flames and fuel mixtures. - lighting torches and adjustment - flame type and effect on veld puddle - characteristics and uses of other fuel gases: Mapp, natural gas, propane, air-acetylene - velding and cutting on containers	I.A.S.#2 Notes/Demo

TOPIC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
	T-THEORY L-LAB		
		Welding terms,positions, joints. - 3 types of velds: bead, groove and fillet - explanation of face, root, throat of weld - 5 types of joints: butt, lap, tee, corner, edge - weld positions in respect to fillet welds - explanation of joint penetration and fusion	I.A.S.#3
		Filler metals and their selection. - RG45, RG60 - tensile strength, ductility - weld soundness in respect to SI content	Notes
		Weld faults: identification and prevention. - appearance, overlap, undercut, lack of fusion, brittle welds, porosity, excessive convexity, concavi ty.	I.A.S.#4 Notes
	6L	Fusion welding practices, 16 gauge metal. - beads, no rod and with rod - edge joint without rod - outside corner joint, with joint - butt joint with rod - lap joint with rod	Demo
	1/2T,9L	Welding of small diameter pipe (1" dia: sch.40). - ASTM welding procedure	I.A.S.I5
	4L	Non-fusion welding practices. - braze welding: definition, uses - advantages and disadvantages - braze weld tee-joint(both sides) - braze tee-joint 16 gauge metal using Allstate #45 (RB45)	I.A.S.#6 Notes/Demo

TOPIC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
	T-THEORY L-LAB		
6	3L	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	O.A.W. I.A.S.#7
7	1/2T	Written test.	
TOTAL HR.	2T,22L	- 8 WEEKS	