

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: WELDING

Code No.:

Program! MVM-APPRENTICE BASIC

Semester:

Date: 1987 07 06

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New:

Revision: XX

APPROVED:

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date July 20/87

WELDING

Course Name

Course Number

PHILOSOPHY/GOALS:

This course of study provides students with a basic level of skills with emphasis placed on O.A. welding, safety and correct procedures.

METHODS OF ASSESSMENT (GRADING METHOD) ;

MARKING SYSTEM	1 - Theory Test	-	30%
	Skill Evaluation	-	60%
A - 85%+	Attendance/Attitude	-	10%
B - 75% - 84%	TOTAL	-	100%
C - 60% - 74%			
D - 50% - 59%			
F - Repeat			

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 marking.

TEXTBOOK(S) ;

I.A.S. and notes.

Students should be given a copy of the course outline.

OBJECTIVES ;

The basic objective is to develop a student with safe work habits in the use of oxy-acetylene welding and cutting equipment. He will be introduced to non-fusion welding practices and to heat effects on metals.

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

SUMMARY - MVM APPRENTICE - BASIC

TOPIC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
	T-THEORY L-LAB		
1a	1/2T	Orientation to program.	O.A.W.
b		Introduction and scope: fusion welding, non-fusion welding, cutting, heating.	I.A.S.#1
2a		Assembling and handling of equipment.	Demo/Note
b		Construction and storage of equipment.	
c		Repairs to accessories.	Demo
d		Types of oxy-actylene flames and fuel mixtures.	O.A.W. I.A.S.#2
		Welding terms, positions, joints	O.A.W. I.A.S.#3
f		Filler metals and their selection.	Notes
g		Weld faults.	O.A.W. I.A.S.#4
	5L	Fusion welding practices.	Notes/Demo
		Non-fusion welding practices.	O.A.W. I.A.S.#5
a	4L	Braze welding.	Notes/Demo
b	1L	Brazing	
c	1L	Soldering	
	2L	Cutting practices.	O.A.W. I.A.S.#6 Demo
		Distortion of metals.	O.A.W. I.A.S.#7 Demo
	1/2T,1L	Basic heat treatment of metals.	O.A.W. I.A.S.#8 Demo
	1/2T	Written Test	
TOTALS	1T, 15L	- 8 WEEKS	

TO*»IC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
	T-THEORY L-LAB		
2e	1/2T	<p>Welding terms, positions, joints.</p> <ul style="list-style-type: none"> - 3 types of welds: 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 <p>Filler metals and their selection.</p> <ul style="list-style-type: none"> - RG45, RG60 - tensile strength, ductility - weld soundness in respect to SI content <p>Weld faults: identification and prevention.</p> <ul style="list-style-type: none"> - appearance, overlap, undercut. lack of fusion, brittle welds, porosity, excessive convexity, concavity 	<p>O.A.W. I.A.S.#3</p> <p>Notes</p> <p>O.A.W. I.A.S.#4 Notes</p>
	5L	<p>Fusion welding practices, 16 gauge metal.</p> <ul style="list-style-type: none"> - beads, no rod and with rod - edge joint without rod - outside corner joint, with rod - butt joint with rod - lap joint with rod 	Notes/Demo
4a	4L	<p>Non-fusion welding practices.</p> <ul style="list-style-type: none"> - braze welding: definition, uses - advantages and disadvantages - braze weld tee-joint (both sides) 	I.A.S.#5 Notes/Demo
	IL	<ul style="list-style-type: none"> - 2F; 3F - brazing, definition; uses - braze tee-joint 16 gauge metal using Allstate #45 (RB45) - safety: fumes, fluxes <p>Soldering</p> <ul style="list-style-type: none"> - definition; uses - fluxes - soldering equipment 	

TOPIC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
	T-THEORY L-LAB		
	1L	- solder steel to steel - solder wire connection	
	2L	Cutting practices. - manual cutting, with and without guide bar - piercing - bolt cutting - cutability of metals Distortion of metals. - upsetting - heat input - neutral axis - heating for shrink fits Basic heat treatment for metals. - effect of heat on: grain size and microstructure	O.A.W. I.A.S.#6 Demo O.A.W. I.A.S.#7 Demo O.A.W. I.A.S.#8 Demo
a b	2L	- forging, hardening, tempering a cold chisel - case hardening	
	1/2T	Written test.	