

#170

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: WELDING

CODE NO,

SEMESTER: F90

PROGRAM: MVM APPRENTICE - INTERMEDIATE

AUTHOR: GUNTER THOM

DATE: 1990-08-29

PREVIOUS OULINE DATED: 1989-05-23

APPROVED:

Q ^ 2 r ! ^ *Cornish*
Dean, School of TecEnical Tra3^es

Qug r ^ f^
Date

t

t

COURSE NAME: WELDING

COURSE NUMBER:

PHILOSOPHY/GOALS:

This course is intended to provide basic instruction in the safe use of arc welding equipment.

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 percentages. 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 objectives are to provide the student with a basic knowledge of arc welding equipment, how to use it safely, and how to make fillet welds in the flat and horizontal positions.

The instructor must ensure that those apprentices who had been excused from taking the Basic course do learn the essentials of the material previously covered.

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

SUMMARY - MVM APPRENTICE - INTERMEDIATE

TOPIC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
	T-THEORY L-LAB		
1a		Introduction to program. Scope of SMAW.	
b	1/2T	Personal and shop safety.	SMAW I.A.S.#1
c		Maintenance of shop and accessories.	
2a	1/2T	Types of welding machines.	SMAW
b		Current adjustments.	I.A.S.#2 Demo
3	1/2T	Electrical principles.	SMAW I.A.S.#3
4	13L	Welding practices.	SMAW I.A.S.#4 Demo
5	1/2T	Selection of filler metals.	SMAW I.A.S.#5
6		Welding terms and definitions.	SMAW I.A.S.#6
7	1/2T	Weld faults.	SMAW I.A.S.#7
8	1/2T	Written test.	
TOTAL HRS.	3T, 13L	- 8 WEEKS	

TOPIC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
	T-THEORY L-LAB		
1a	1/2T	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	SMAW I.A.S.#1
c		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	
2a		Types of welding machines. - transformer - transformer/rectifier - generator - cost, maintenance of machines - advantages and disadvantages	SMAW I.A.S.#2 Demo
b	1/2T	Current adjustments. - coarse and fine adjustments - standard and remote - current and polarity - concept of polarity - quick disconnect couplers	
3	1/2T	Electrical principles. - copy the face plate of a welding machine; input, output, phase - definition of ampere, volt, ohm, duty cycle, OCV	SMAW I.A.S.#3

TOPIC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
	T-THEORY L-LAB		
4 a	13L	<p>Welding practices.</p> <ul style="list-style-type: none"> - beads: 1/8 E6011; AC 1/8 E6013; AC 3/32 E7024; AC 1/8 E7018; DC+; AC - weaves (Pad): 3/8 plate 3" X 6" 1/8 E6011 1 plate 1/8 E7024 1/8 E7018 1 plate; both sides - welding joint 1/4" plate or 1/8 plate <ul style="list-style-type: none"> i) - edge joint E7018 - E7014 - E6013 ii) - lap joint E7018 - E7024 - fillet weld to size iii) - outside corner E6011 - E7018 iv) - tee JOINT; IF E7018 - E7024 v) - 2F; 3F single pass and multipass welds for more advanced students 	SMAW I.A.S.#4
	1/2T	<p>Selection of filler metals.</p> <ul style="list-style-type: none"> - AWS; CSA classification - imperial and metric sizes - operating characteristics of E6011, E6011, E6013, E7024, E7018 - mechanical properties of above (5) rods 	SMAW I.A.S.#5

TOPIC NO.	PERIODS	TOPIC DESCRIPTION	REFERENCE
	T-THEORY L-LAB		
6		Welding terms and definitions. - fillet weld terms - groove weld terms - layers and passes - weld sizes, shapes - types of welds and joints	SMAW I.A.S.#6
7	1/2T	Weld faults. - overlap, undercut - lack of fusion and penetration - porosity, external and internal - underbead cracking - arc blow - prevention of distortion and weld procedures	SMAW I.A.S.#7
8	1/2T	Written test.	
TOTAL HRS. 3T, 13L - 8 WEEKS			

t

t