

SAULT COLLEGE
of Applied Arts and Technology
Sault Ste. Marie

COURSE OUTLINE

WELDING MET 103-2

r6VJS6C1 June, 1981 by D. Socchia

BLOCK	NO. OF PERIODS		TOPIC INFORMATION
Oxy-Acetylene	Theory	Lab	
Section			
1	2		a) Scope of Oxy-Acetylene Welding b) Safety c) Set up of Equipment d) Equipment Construction e) Basic Repairs f) Oxy-Acetylene Flame Characteristics g) Common Fuel Mixtures h) Types of welds, positions, joints i) Filler Metals
2		6	a) Fusion Welding Practice
3		2	a) Non-fusion Welding Practice b) Hardfacing
4		2	a) Cutting Practice
	2	10	
Electric Arc Welding			
*	SMAW	Theory	Lab
Section			
1	1		a) Scope of Welding and Safety Principles b) Welding Machines and Electric principles c) Welding Cables and Accessories
2	1	1	a) Filler metals and their selections
3		10	a) Welding Practice
4		1	a) Arc Gouging
5		2	a) Fabrication practice
		14	

Topic Objectives

The student should be able to:

- a) know the production of gases, appreciate the application, advantages and disadvantages of gas welding.
- b) transport portable cylinders, light torches safely
- c) attach regulators, hoses, torches, etc. change cutting and welding tips.
- d) know the construction of general equipment
- e) change "O" rings
make hose splices
- f) know the character and application of 3 types of flames.
- g) know the characteristics and uses of propane MAPP, natural gas, air-acetylene mixtures.
- h) identify 4 basic joints, welds and positions
- i) know the AWS classification of filler rods, tradenames, etc.
 - weld a lap, tee and butt joint 16 ga. metal
 - identify and correct weld faults
 - repair fusion weld on a cast iron fracture
- a) - braze weld a tee joint
 - braze weld & repair a cast iron object
 - braze (silversolder) steel to steel
stainless steel
copper tubing
aluminum sheet
- b) Hardface a cutting edge using Stellite and a spray type torch.
 - cut straight lines freehand and using a guide
 - use a circle cutting attachment
 - cut a shaft, pipe, and structural shapes
 - gouge out a weld
 - cut hole in plate

NO. OF PERIODS
Theory Lab

Topic Objectives

The student should be able to:

- appreciate and adopt the shop regulations as laid out by the instructor concerning dress, clean-up and procedures regarding personal health and safety.
- appreciate the development of electric arc welding and its present use.
- know 4 types of stick-electrode welding machines
- appreciate the rating i.e. input - output, duty cycle, OCV, arc voltage, short circuit, amp rise, Voltage drop.
- guard against electric shock, flashes, stray currents
- appreciate AC/DC welding characteristics
- make basic repairs to connections, helmets, holders, cables
- appreciate cable size, length, care.

know the classification of mild steel electrode, low alloy, high strength rod, cast iron rods, stainless steel rods
select electrodes in respect to service conditions, mechanical properties, operating characteristics and weld size requirements

- 6 - make build-up welds on plate and a shaft using 1/8 - 7018 rod.
- 2 - make fillet welds to size using 1/8 - 3/16 - E7024, 7018, 7928 rods.
- 2 - weld vertical metal using carbon-arc equipment
- 1 - remove weld metal using carbon-arc equipment
- 2 - bend cold and hot forge a U bolt, eyelet
- cut and cope angle iron and channel to make a simple frame.