SAULT COLLEGE OF APPLIED ARTS AND TECBDSOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: **WELDING**

CODE NO.: **Met621/622** **SEMESTER:** **N / A**

PROGRAM: **PLUMBING / STEAM FITTING - BASIC**

AUTHOR: **D. CXfcMENT-SOCCHIA**

DATE: **June 1998** **PREVIOUS OUTLINE DATED: Aug 1996**

APPROVED: *f^/1. 0-/r sss* AS*^* _____ *Qf/A^* *M/T^*
' 'DEAN '" ^/ DATE

TOTAL CREDITS **N / A**

PREREQUISITE(S): An apprenticeship in either the Plumbing or Steam Fitting Trade

LENGTH OF COURSE: 3 Hours / Week for 8 Weeks

TOTAL CREDIT HOURS: 24 Hours

COURSE DESCRIPTION: A curriculum that has been designed to provide a combination of theoretical knowledge and practical skill in the safe use and operation of typical oxyacetylene welding, cutting and heating equipment It will include both shop demonstrations and practical application of the above equipment in order to reinforce learning.

n. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:
(Generic Skills Learning Outcomes placement on the course outline will be determined and communicated at a later date.)

Upon successful completion of this course the student will demonstrate the ability to:

1) *Demonstrate and describe a sound working knowledge of both personal and shop safety.*

Potential Elements of the Performance:

- identify proper eye, hand, face protection
- identify proper footwear and clothing
- locate and identify shop ventilation devices
- locate and identify emergency fire exits
- identify the location of shut-off valves for the shop manifold gas system
- explain procedures for evacuation of shop areas in case of emergency
- describe the physical construction of both oxygen and acetylene cylinders
- identify the built-in safety devices for both oxygen and acetylene cylinders
- describe methods for identifying both oxygen and acetylene cylinders, hoses, regulators and fittings
- identify basic physical properties and dangers associated with oxygen gas
- identify basic physical properties and dangers associated with acetylene gas
- describe procedures for cylinder handling
- describe procedures for setting up, pressurizing, purging and shutting down a portable oxyacetylene station

IL LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE (Continued)

2) ***Demonstrate and describe a sound working knowledge of how to set up and operaiea typical axyacetylene workstation.***

Potential Elements of the Performance:

- perform a routine inspection of assigned workstations to determine the condition of torch body, hoses, regulators and tips
- correct deficiencies prior to the commencement of work
- understand the differences in construction and operation between a balanced pressure and an injector torch
- pressurize and purge regulators, hoses, torch body and tip
- explain the dangers associated to the hazards of backfire and flashback
- explain the correct safe response to backfire **and** flashback
- identify correct verses unsafe flame ignition procedures
- adjust the oxyacetylene flame to produce flames designated as carburizing, neutral anoxidizingng
- describe procedures for the shutting down of the oxyacetylene torch, regulators and assigned workstation

3) ***Demonstrate by means of both practical shop assignments and*** *tests* ***a sound working knowledge of how to perform fusion welding operations.***

Potential Elements of the Performance:

- describe potential fire, fume and explosion hazards associated to the fusion welding of metals
- identify proper fusion welding techniques
- perform appropriate pressure settings and flame adjustments for specific fusion welding exercises
- perform both fillet and groove weld exercises
- identify and correct common fusion welding faults
- test weld samples for soundness

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE (Continued)

4) *Demonstrate by means of practical shop assignments and tests a sound working knowledge of how to perform flame cutting and heating operations.*

Potential Elements of the Performance:

- -describe potential fire, fume and explosion hazards associated to the flame cutting of metals
- identify flame cutting equipment and accessories
- identify proper flame cutting techniques
- perform appropriate pressure settings and flame adjustments for specific flame cutting exercises
- perform typical flame cutting exercises
- identify and correct common faults associated with the flame cutting process

5. *Demonstrate by means of regular attendance, punctuality, respect for fellow students as weU as lab/shop equipment, a wUlingness to asmme the responsibility employment.*

Potential Elements of the Performance:

- be present for all scheduled classes
- provide a satisfactory reason to the professor for having to leave class early
- provide a reasonable excuse to the professor for being absent from class
- provide a written statement to the professor explaining the reason(s) for being absent on an assignment due date or the day of a scheduled test
- demonstrate behaviour that does not interfere with or obstruct the over-all learning environment
- actively participate in all course assignments and projects
- operate any and all lab / shop equipment according to guidelines prescribed by the college and / or course professor
- wear personal protective equipment at all times while in the shop
- return all equipment and unused practice materials to their designated place upon completion of work
- remove all scrap and thoroughly clean individual and / or assigned station

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

C.S.A. Approved (High Cut) Safety Work Boots
C.S.A. Approved (Impact Resistant) Safety Glasses
Appropriate Work Wear
Notebook c/w Paper
Two Finger (Gauntlet Type) Welding Gloves
Text: "Principles of Industrial Welding"

V. EVALUATION PROCESS/GRADING SYSTEM

The evaluation for Learning Outcomes # 1 thru # 4 will consist of an over-all theory test as well as designated lab/shop assignments and tests for which students must demonstrate proficiency in both 'knowledge' and 'hands on' skill. Failure to complete all as designated lab/shop assignments and tests shall result in the loss of the entire 10 % allocated to the "Employment Readiness" evaluation.

The over-all *theory test* will represent *35%* of the mark for the above Learning Tasks and will be *bpen book'using* Met 621 / 622 course notes and the identified text

All *practical lab /shop assignments* will represent *55%* of the mark for the above Learning Tasks and must be completed prior to the writing of the said theory test

While all tests and assignments are designed to be completed with the specified time limit (or less), students NfUST report to the shop/ classroom fully prepared Your professor will supply only the assignment or test instructions.

The evaluation for Learning Outcome # 5 will consist of a day to day recording of the Elements of Performance listed. Each infraction will constitute the loss of one percentage point from the *10 percentage points* allocated to this outcome.

Course Grading Scheme	
A	85 - 100%
B	75 - 84%
C	60 - 74%
D	50 - 59%
F	0 - 49%

Final Mark (*»• item s 3 infer speeu Not*)	
Shop Assignments	55%
Theory Test	35%
Employment Readiness	10%

VL SPECIAL NOTES:

1- Special Needs
If you are a student with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext 493,717,491 so that support services can be arranged for you.

2. Retention of Course Outlines
It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other post-secondary institutions.

3. Student evaluations concerning the **'Final Mark*** are further affected by the conditions set forth in the printed handout, ***Welding Department Guidelines***'. Be sure that you receive a copy of these guidelines.

4. Course materials that are discussed and / or explained during any and all lab or shop demonstrations are subject to evaluation. Students are therefore responsible for the content of all lab / shop demonstrations.

5. Your Professor reserves the right to modify the course as he/she deems necessaiy to meet the needs of students.

6. Substitute Course Information is available at the Registrar's Office.

7. Any person caught cheating or substituting another person's work in place of their own for the purpose of grading or evaluation will automatically fail the said assignment or test College policy* also dictates that such persons may be subject to immediate dismissal.

* Students should refer to the definition of "academic dishonesty" provided in the Sault College "Statement of Student Rights and Responsibilities".

VH. PRIOR LEARNING ASSESSMENT

Students who wish to apply for advanced credit in the course should consult the instructor. Credit for prior learning will be given upon successful completion of the following:

1. The successful completion of an oxyacetylene flame cutting and welding course with Learning Outcomes and Elements of Performance that are at least 80% compatible with this course outline...

AND

2. The successful challenge of the over-all theory test identified by this course outline.

<OR>

3. Documented proof of at least three (3) years of competent trade experience involve oxyacetylene flame cutting and welding that is compatible with Learning Outcomes described in Met 621 / 622 ...

AND

4. The successful challenge of the over-all theory test identified by this course outline.