Sault College of Applied Arts and Technology
Sault Ste Marie, ON

Sault College

Course Outline

Course Title WELDING

Course No: ASM112 Semester N / A

Program MOTIVE POWER PRE - APPRENTICESHIP

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Date December 2001 Previous Outline Dated October 1999

Approved _____

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Dean Date

Total Credits 2

Prerequisites Acceptance into Motive Power (ASM112) or its equivalent

Length of Course 4 Weeks Total Credit Hours 8

I. COURSE DESCRIPTION: This curriculum that has been designed to provide students with an introductory working knowledge and level of skill in the safe use and operation of typical oxyacetylene welding, cutting and heating equipment. Shop demonstrations and practical assignments have been included in order to enhance the over-all learning experience.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1) ***Communicate clearly and correctly in the written form as well as demonstrate by means of practical shop assignments a sound working knowledge of both personal and shop safety.***

Potential Elements of the Performance:

- identify proper eye, hand, and 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
- understand 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 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, pressurising, purging and shutting down a portable oxyacetylene station

2) ***Communicate clearly and correctly in the written form as well as demonstrate by means of practical shop assignments a sound working knowledge of how to set up and operate a typical oxyacetylene 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
- pressurise 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 and oxidising
- describe procedures for the shutting down of the oxyacetylene torch, regulators and assigned workstation

3) ***Communicate clearly and correctly in the written form as well as demonstrate by means of practical shop assignments a sound working knowledge of how to perform both fusion and braze 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
- describe potential fire, fume and explosion hazards associated to the braze welding of metals
- identify proper braze welding techniques
- perform appropriate pressure settings and flame adjustments for specific braze welding exercises

4) ***Communicate clearly and correctly in the written form as demonstrate by means of practical shop assignments a reasonable 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 proper flame cutting techniques, appropriate pressure settings and flame adjustments for specific flame cutting exercises
- describe potential fire, fume and explosion hazards associated to the heating of metals
- describe potential changes to ductility and hardness that can as a result from the heating and rapid cooling of metals

5. ***Demonstrate by means of regular attendance, punctuality, respect for fellow students as well as lab / shop equipment, a willingness to assume the responsibilities of employment***.

Potential Elements of the Performance:

- be present for all scheduled classes
- provide a satisfactory reason for having to leave class early
- provide a reasonable excuse 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
- 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

III. TOPICS:

1. Personal and Shop Safety
2. Oxyacetylene Station Setup
3. Oxyacetylene Welding and Cutting Practices
4. Employment Readiness

IV. REQUIRED STUDENT RESOURCES / TEXTS and MATERIALS:

CSA Approved (Impact Resistant) Safety Glasses
CSA Approved (8 inch High Cut) Safety Work Boots
CSA Approved (Gauntlet Type) Welding Gloves
Appropriate Work Wear
Pocket Note-pad for Shop Demonstration and Discussion Content
Text: Principles of Industrial Welding

V. GRADING SYSTEM:

The final course grade will be calculated based upon the following weighted factors:

Shop Assignments	55%
Theory Test	35%
Employment Readiness	10%

Final course grades are then assigned by means of the following breakdown:

Grade	***Definition***	***Grade Point Equivalent***
A+	94 – 100%	4.00
A	80 – 93%	3.75
B	70 – 79%	3.00
C	60 – 69%	2.00
R (Repeat)	59% or below	0.00

CR (Credit)	Credit for diploma requirements has been awarded.
S	Satisfactory achievement in field placement or non-graded subject areas.
U	Unsatisfactory achievement in field placement or non-graded subject

areas.

X *A temporary grade. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see Policies & Procedures Manual B Deferred Grades and Make-up).*

NR *Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has not been possible for the faculty member to report grades.*

VI. SPECIAL NEEDS

1. Special Needs:
If you are a student with special needs (e.g. physical limitations, visual impairment, hearing impairment, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493, 717, or 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 postsecondary institutions.

3. Plagiarism:
Students should refer to the definition of academic dishonesty@ in Student Rights and Responsibilities. Students who engage in academic dishonesty@ will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

4. Course outline amendments:
The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

5. Substitute course information is available in the Registrars office.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.