SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: Welding

CODE NO. : HET701 **SEMESTER:** N/A

PROGRAM: HEAVY EQUIPMENT TECHNICIAN – Level 2

AUTHOR: Steve Witty

DATE: Dec 2008 **PREVIOUS OUTLINE DATED:** Jan 2007

APPROVED: **"Corey Meunier"**
CHAIR _____
DATE

TOTAL CREDITS: N/A

PREREQUISITE(S): Successful completion of WELDING for the Motive Power Common Core Level of training or its equivalent

HOURS/WEEK: 2

I. COURSE DESCRIPTION: A two part curriculum that begins with a review of the theoretical knowledge and practical (hands on) skill related to the safe use and operation of typical Oxy-acetylene welding equipment. The second part is introduces the Shielded Metal Arc Welding process and its related equipment.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. ***Demonstrate by means of practical shop assignments and in writing, a sound working knowledge of both personal and shop safety.***

   Potential Elements of the Performance:
   - identify proper work boots, gloves and eye protection
   - identify recommended fabrics and materials for personal protective clothing
   - identify and select proper shades of welding lenses
   - identify, select and adjust welding helmets for proper fit and vision
   - locate and identify shop lighting and ventilation switches
   - locate and identify emergency exits
   - understand procedures for evacuation of shop areas in the case of
   - emergencies

2. ***Demonstrate how to safely set up and operate a typical Oxy-acetylene workstation.***

   Potential Elements of the Performance:
   - perform a routine inspection of assigned workstations to determine the condition of torch body, hoses, regulators and tips
   - report / correct deficiencies before the commencement of work
   - understand the differences in construction between a balanced pressure torch 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 vs. unsafe flame ignition procedures
   - adjust the oxyacetylene flame to produce flames designated as carburising, neutral and oxidizing
   - describe procedures for the shutting down of the torch, regulators and assigned work station.

3. ***Demonstrate the ability to perform typical flame cutting and heating operations .***

   Potential Elements of the Performance:
   - flame cut plate and gage metal
   - bevel plate and gage metal
   - pierce holes in plate
   - heat metals for the purpose of
     - hardening
     - soften / temper

4. ***Demonstrate the ability to set up and operate a typical SMAW workstation .***

   Potential Elements of the Performance:
   - identify proper eye, hand and face protection
   - identify proper footwear and clothing
   - identify potential fire, fume and explosion hazards associated to the Shielded Metal Arc Welding process
   - identify electrode types, sizes according to CSA / AWS specification
   - perform a routine inspection of assigned workstations to determine the condition of electrode holder, welding cable and ground clamp
   - report / correct deficiencies prior to the commencement of work
   - produce fillet and grove welds on plate in the flat and / or horizontal positions

III. TOPICS:

1. Personal and Shop Safety
2. Set up and Operation of a typical Oxyacetylene workstation
3. OFG Flame Cutting / Heating Practices and Procedures
4. Set up and Operation of a typical SMAW workstation
5. SMAW Practices and Procedures

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- CSA Approved (Impact Resistant) Safety Glasses
- CSA Approved (6 inch High Cut) Safety Work Boots
- CSA Approved (Gauntlet Type) Welding Gloves
- Appropriate Work Wear (see Welding Shop Guidelines)
- Course Pack HET 702

V. EVALUATION PROCESS/GRADING SYSTEM:

The final course grade will be determined by means of the following list of weighted factors:

Factor	***Value***
Shop Assignments	65 %
Theory Quiz & Test	35 %
Attendance	-1% per Unexcused Hour
Shop Clean-up	-1% per Incident

The following grades will be assigned to students:

Grade	**Definition**	*Grade Point Equivalent*
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

CR (Credit)	Credit for diploma requirements has been awarded.
S	Satisfactory achievement in field /clinical placement or non-graded subject area.
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

VI. SPECIAL NOTES:

Disability Services:
If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

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.

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.

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.

Substitute course information is available in the Registrar's office.

Re-writes are NOT ALLOWED for the final theory test

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.