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

Course Outline

Course Title WELDING

Code No MVM 700 Semester N / A

Program Automotive Service Technician – Phase 1

Author Dennis Clement-Socchia

Date November 2001 Previous Outline Dated May 1998

Approved _____ _____
DEAN DATE

Total Credits N / A

Prerequisites The successful completion of the Common Core MPC-600 level of in school training or its equivalent.

Hours / Week 2

Kitty DeRosario, Dean
School of Technology, Engineering and Technical Trades
(705) 759-254, Ext 642

I. COURSE DESCRIPTION: A trades curriculum that has been designed to provide students with a sound theoretical knowledge of safe use and operation of Gas Metal Arc welding equipment. It will include shop demonstrations and some practical application of the above equipment in order to reinforce learning.

II. LEARNING OUTCOMES AND ELEMENTS OF PERFORMANCE

Upon successful completion of this course, the student will have been given the ability to:

1. Communicate clearly and correctly in the written form as well as demonstrate by means of their participation in shop activities, a sound working knowledge of both personal and shop safety.

Potential Elements of Performance:

- identify proper eye, hand and face protection
- identify proper footwear and clothing
- locate and identify shop ventilation controls
- locate and identify emergency exits
- locate and identify manifold shut-off valves for the shop gas system
- understand emergency shop evacuation procedures
- identify potential hazards associated with the GMAW process

2. Demonstrate and describe a sound working knowledge of how to set up and operate a typical GMAW workstation.

Potential Elements of Performance:

- Identify and explain the pre-weld service requirements for drive rolls, contact tips, gun nozzle and liner
- Identify and set correct shielding gas flow rates, voltage and wire feed speeds specific to the demands of single and multi-pass welds
- Understand the relationship between wire feed speed and welding amperage
- Understand the relationship between voltage and weld appearance
- Understand the relationship between electrical stick-out and weld quality
- Perform a routine inspection of individual workstations in order to determine the condition of wire feeder, cables, torch body, hoses and regulators.
- Report and / or correct deficiencies prior to the commencement of shop assignments
- Describe techniques for arc ignition as well as the setting of gun angle and travel speeds
- Explain the differences between the push vs the pull techniques as they relate to weld metal penetration and contour
- Produce trial beads in order to verify the accuracy of initial machine settings

3. Demonstrate and describe by means of practical shop assignments and tests a sound working knowledge of how to perform Gas Metal Arc welding operations.

Potential Elements of Performance:

- describe potential fire, fume and explosion hazards associated to the Gas Metal Arc welding process
- demonstrate proper welding techniques
- perform appropriate adjustments to GMAW equipment specific to the demands of various welding exercises
- identify defective welds and re-adjust machine settings or welding techniques in order to eliminate same
- determine weld soundness by means of visual and / or destructive testing

4. Demonstrate by means of punctuality, regular attendance and clean-up as well as respect for fellow students a willingness to assume the responsibilities of employment.

Potential Elements of Performance:

- be present for all classes
- provide a satisfactory reason to the professor for having to leave the class early or being absent from class
- provide a written excuse to the professor explaining the reason(s) for being absent on an assignment due date or on the day of a scheduled test
- demonstrate behavior that does not interfere with or obstruct the over-all learning environment
- actively participate in all assignments and projects
- operate any and all lab / shop equipment according to the procedures and guidelines set forth by the course professor
- wear the prescribed personal safety equipment at all times while in the shop
- return all equipment and unused practice materials to their designated place upon completion of work and / or during shop cleanup
- remove all scrap and thoroughly clean individual workstations
- remain in the shop to assist in the general cleaning and shutting down of the shop upon completion of the scheduled class

III. TOPICS:

1. Personal and Shop Safety
2. Set-up and Operation of a GMAW work Station
3. GMAW Welding Practices and Safe Work 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. FINAL GRADE DETERMINATION:

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

Factor		***Weight***
Shop Assignments and Tests	=	25%
Theory Tests	=	65%
Employment Readiness	=	10%

VI. GRADING SYSTEM:

The following semester grades will be assigned to students in apprenticeship training courses:

Grade	Definition
A+	95 – 100%
A	85 – 94%
B	75 – 84%
C	60 – 74%
D	50 – 59%
R (Repeat)	0 – 49%

VI. SPECIAL NEEDS

1. Special Needs:
   If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, 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 Registrar's 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.