COURSE OUTLINE

AUTO 104 - BASIC WELDING

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CANINO SCHOOL OF ENGINEERING TECHNOLOGY
AUTOMOTIVE TECHNOLOGY
November 2015
A. **TITLE:** Basic Welding

B. **COURSE NUMBER:** AUTO 104

C. **CREDIT HOURS:** 2

D. **WRITING INTENSIVE COURSE:** NO

E. **COURSE LENGTH:** 15 weeks

F. **SEMESTER(S) OFFERED:** Fall/Spring

G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:**
   1 hour lecture, 2 hours lab

H. **CATALOGUE DESCRIPTION:** This course in welding will include all basic processes and procedure in joining and cutting ferrous and nonferrous metals found in automotive/industrial applications. Focus will include safety, proper techniques and quality control.

I. **PRE-REQUISITES/CO-COURSES:** (Fall semester, restricted to Automotive Technology)
   a. Pre-requisite(s): NONE
   b. Co-requisite(s): NONE

J. **GOALS (STUDENT LEARNING OUTCOMES):**

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<th>Course Objective</th>
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<td>Apply safe practices associated with any welding and heat related cutting.</td>
<td>2. Crit. Thinking</td>
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<td>3. Prof. Competence</td>
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<td>Demonstrate knowledge with the different types of welding, cutting and heating used in the industry.</td>
<td>2. Crit. Thinking</td>
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<td>3. Prof. Competence</td>
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<td>Demonstrate and understand the different types of processes: GMA (mig), SMAW (stick metal arc), GTAW (tig), FCAW (Flux core arc), oxyfuel, plasma cutting and heating.</td>
<td>2. Crit. Thinking</td>
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<td>3. Prof. Competence</td>
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L. **REFERENCES:** Lincoln Welding Manuals, Miller Welding Manuals, ESAB manuals, Victor, Purox, and Harris Gas Welding and Cutting Manuals.

M. **EQUIPMENT:** Mig welders, Stick welders, welding rods, Tig welders, oxyacetylene station, Plasma cutter, shielding gases, braze rods, hammers, hoods, sheet metal.

N. **GRADING METHOD:** A-F
O. **MEASUREMENT CRITERIA/METHODS:** Quizzes, Exams, Homework, Laboratory Performance tests

P. **DETAILED TOPICAL OUTLINE:**

1. Topics (Lectures)
   
   A. Safety/Symbols - for the different types and methods of welding.  
   B. Oxy-acetylene weld/cut - set proper pressure and different types of cuts and weld beads.  
   C. Plasma cutting - safety and technique.  
   D. Stick metal arc welding - rod identification, use of each and safety  
   E. Gas metal arc welding - wire identification, gas uses and techniques.  
   F. Gas tungsten arc welding - tungsten identification, gas use, and technique  
   G. Materials structure - changes caused by heating and cooling.  
   H. Joint design - identification of joint design, and use of each

Q. **LABORATORY OUTLINE:**

1. Laboratory Experiences
   
   A. Safety/Equipment maintenance - practice safety and care of equipment.  
   B. Oxy-acetylene cut and weld processes - set proper pressure and weld different beads.  
   C. Brazing/Heating - practice brazing, welding, and heating materials.  
   D. Plasma cutting (ferous/non-ferous) - proper setup and setting technique.  
   E. Electric arc welding-various beads - learn and use proper angles and speed and proper use of electrodes.  
   F. MIG welding - mode/transfer - learn and perform different modes of transfer.  
   G. TIG welding - aluminum/stainless steel - learn the use of different tungsten and weld techniques.  
   H. Strength tests/bend tests - test welds upon completion of each.