STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS
COURSE NUMBER – COURSE NAME
WELD 102 – SMAW (Stick) and Gouging

Created by: Christopher Mayville

Updated by:

Canino School of Engineering Technology
Department: Mechanical & Energy Technology
Semester/Year: Spring 2021
A. **TITLE**: SMAW (Stick) and Gouging

B. **COURSE NUMBER**: WELD 102

C. **CREDIT HOURS**: (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)

   # Credit Hours: 4
   # Lecture Hours: 2 per week
   # Lab Hours: 4 per week
   Other: per week

   Course Length: 15 Weeks

D. **WRITING INTENSIVE COURSE**: Yes ☐ No ☒

E. **GER CATEGORY**: None: ☒ Yes: GER
   
   *If course satisfies more than one*: GER

F. **SEMESTER(S) OFFERED**: Fall ☒ Spring ☐ Fall & Spring ☐

G. **COURSE DESCRIPTION**: 
In this course, students learn about Shielded Metal Arc Welding with an overview and use of multiple electrode materials. All positions and procedures are taught and practiced as they apply to each electrode, to include gouging.

**H. PRE-REQUISITES:** None ☒ Yes ☐ If yes, list below:

**CO-REQUISITES:** None ☒ Yes ☐ If yes, list below:
I. **STUDENT LEARNING OUTCOMES**: *(see key below)*

By the end of this course, the student will be able to:

<table>
<thead>
<tr>
<th>Course Student Learning Outcome [SLO]</th>
<th>Program Student Learning Outcome [PSLO]</th>
<th>GER [If Applicable]</th>
<th>ISLO &amp; SUBSETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify how welding currents are applied based on weld parameters.</td>
<td>2</td>
<td>2-Crit Think ISLO ISLO</td>
<td>PS Subsets Subsets</td>
</tr>
<tr>
<td>Explain how to correct various welding problems that might be encountered.</td>
<td>2</td>
<td>2-Crit Think ISLO ISLO</td>
<td>IA Subsets Subsets</td>
</tr>
<tr>
<td>Select the appropriate electrode according to requirements of a specific welding job.</td>
<td>2</td>
<td>2-Crit Think ISLO ISLO</td>
<td>PS Subsets Subsets</td>
</tr>
<tr>
<td>Successfully perform welds on butt joints, edge welds, outside corner joints, lap joints, tee joints, and fillet welds requiring multiple passes.</td>
<td>4</td>
<td>5-Ind, Prof, Disc, Know Skills ISLO ISLO</td>
<td>Subsets Subsets Subsets</td>
</tr>
<tr>
<td>Successfully perform welds in the flat, horizontal, vertical, and overhead positions.</td>
<td>4</td>
<td>5-Ind, Prof, Disc, Know Skills ISLO ISLO</td>
<td>Subsets Subsets Subsets</td>
</tr>
<tr>
<td>Complete welds on flat plate, pipe, and sheet metal.</td>
<td>4</td>
<td>5-Ind, Prof, Disc, Know Skills ISLO ISLO</td>
<td>Subsets Subsets Subsets</td>
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**Institutional Student Learning Outcomes [ISLO 1 – 5]**

<table>
<thead>
<tr>
<th>ISLO #</th>
<th>ISLO &amp; Subsets</th>
</tr>
</thead>
</table>
| 1      | Communication Skills  
Oral [O], Written [W] |
| 2      | Critical Thinking  
Critical Analysis [CA], Inquiry & Analysis [IA], Problem Solving [PS] |
| 3      | Foundational Skills  
Information Management [IM], Quantitative Lit./Reasoning [QTR] |
| 4      | Social Responsibility  
Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T] |
| 5      | Industry, Professional, Discipline Specific Knowledge and Skills |

*Include program objectives if applicable. Please consult with Program Coordinator*
J. **APPLIED LEARNING COMPONENT:**  

Yes ☒  No ☐

If YES, select one or more of the following categories:

☒ Classroom/Lab  
☐ Internship  
☐ Clinical Placement  
☐ Practicum  
☐ Service Learning  
☐ Community Service  

☐ Civic Engagement  
☐ Creative Works/Senior Project  
☐ Research  
☐ Entrepreneurship  
   (program, class, project)
K. **TEXTS:**


L. **REFERENCES:**

None

M. **EQUIPMENT:** None □ **Needed:** Standard welding lab equipment as well as transformer and inverter type SMA welders capable of producing AC and DC current.

N. **GRADING METHOD:** A-F

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

Homework, quizzes, tests, lab exercises, and hands on practical exams

P. **DETAILED COURSE OUTLINE:**

1. Introduction to Shielded Metal Arc Welding and Welding Safety
2. Shielded Metal Arc Welding Equipment, Setup, and Operation
   - Power Sources
   - Welding Currents and Voltage
Duty Cycle

3. Electrodes and Selection

4. Joint Preparation

5. Preparing and Beginning to Weld
   - Striking an Arc
   - Electrode Angle
   - Electrode Travel Patterns

6. Welding Joints
   - Stringer Beads
   - Square Butt Joint
   - Edge Weld
   - Outside Corner Joint
   - Lap Joint
   - Tee Joint
   - Multi-pass Fillet Welds

7. Welding Passes
   - Tack Welds
   - Root
   - Hot Pass
   - Filler Weld
   - Cover Weld
   - Restarts

8. Welding Positions
   - Horizontal
   - Vertical
   - Overhead

9. Controlling Distortion
10. Welding Problems
11. Welding Round Stock
12. Welding Pipe
13. Cutting with Arc
14. Hard Surfacing
15. Weld Inspection

Q. LABORATORY OUTLINE: None ☐ Yes ☒

1. Preparing to Weld
2. Stringer Beads
3. Joint Preparation
4. Welding Butt Joints
5. Welding Lap Joints
6. Welding Tee Joints
7. Welding Multi-pass Filet Welds
8. Welding in the Horizontal Position
9. Welding in the Vertical Position
10. Welding in the Overhead Position
11. Welding Pipe
12. Arc Welding Aluminum
13. Hard Surfacing
14. Cutting With Arc