STATE UNIVERSITY OF NEW YORK

COLLEGE OF TECHNOLOGY

CANTON, NEW YORK

MASTER SYLLABUS
WELD 113 – Sheet Metal Fabrication

Created by: Paul Todd and Christopher Mayville

Updated by:

Canino School of Engineering Technology
Department: Mechanical & Energy Technology
Semester/Year: Spring 2021

A. **TITLE**: Sheet Metal Fabrication

B. **COURSE NUMBER:** WELD 113

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

 # Credit Hours: 3

 # Lecture Hours: 2 **per week**

 # Lab Hours: 2 **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 pattern making and metal bending processes for sheet metal fabrication. Spot welding and press brake procedures are also covered.

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

WELD 101, WELD 103

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:

Course Student Learning Outcome [SLO]	***Program Student Learning Outcome [PSLO]***	***GER*** *[If Applicable]*	***ISLO & SUBSETS***	
Demonstrate the safe use of sheetmetal sheering, bending, and rolling equipment.	5		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
Cut sheet metal to proper dimension and shape using cutting equipment common to metalworking and welding trades.	4		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
Develop and layout patterns for bending sheetmetal to desired specifications.	1		1-Comm Skills ISLO ISLO	W Subsets Subsets Subsets
Bend and shape sheet metal using bending and rolling equipment common to the metalworking and welding trades.	4		5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
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KEY	Institutional Student Learning Outcomes [ISLO 1 – 5]
ISLO #	**ISLO & Subsets**
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:

None

L. REFERENCES:

Meyer, L. A. (2006). Sheet Metal. ATP.

M. EQUIPMENT: None ☐ Needed: Ironworker machine, sheet metal sheering equipment, metal bender, bend brake, press brake, metal roller, bead roller, protractors, angle finders, basic metalworking tools and equipment for sheetmetal.

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Homework, quizzes, and labwork.

P. DETAILED COURSE OUTLINE:

1. Introduction to Sheet Metal Fabricaiton

A. Sheet Metal Types

B. Hand Tools

C. Floor Machines

C. Shop Safety

D. Common Sheet Metal Products

2. Sheet Metal Manipulation

A. Using Patterns and Cutting Metal

B. Punching, Drilling, and Riveting

C. Folding Edges and Making Seams

D. Turning, Burring, and Raising

E. Forming, Crimping, Beading and Grooving

F. Bending Tools and Processes

3. Light Gauge Sheet Metal Pattern Making

A. Drawing Basics

B. Parallel Line Development

C. Triangulation

4. Heavy Gauge Sheet Metal

A. Bend Allowances

B. Hot and Cold Forming

C. Stamping and Punching

D. Rolling

E. Shearing

F. Plasma, Water Jet, and Laser Cutting

Q. LABORATORY OUTLINE: None ☐ Yes ☒

1. Shop Indroduction

A. General Shop Safety

- **B. Tool Use and Safety**
- **C. Materials**
- **D. Labwork Overview**

2. Light Gauge Sheet Metal Practice

- **A. Using Patterns and Cutting Metal**
- **B. Punching, Drilling, and Rivitng**
- **C. Folding Edges and Making Seams**
- **D. Turning, Burring, and Raising**
- **E. Forming, Crimping, Beading and Grooving**

3. Pattern Making

4. Light Gauge Sheet Metal Projects

- **A. Spot Welded Box**
- **B. Custom Project with Pattern**

5. Heavy Gauge Sheet Metal Projects

- **A. Assigned Pattern Project**
- **B. Custom Project with Pattern**