

Lake Michigan College

Course Cover Sheet



M-CAM Training Area:

CNC/Machining Multi-Skilled Mechatronics Production Operation Welding/Fabrications

Program(s): Welding Production Technology

Course: Shielded Metal Arc Welding I

Course Description:

SUBJECT	TITLE	CONTACT HOURS	COURSE DESCRIPTION
WELD 102	SHIELDED METAL ARC WELDING I	45	Covers the process commonly known as stick welding. Upon completion of this course, the student will be able to weld in all positions, read some basic weld symbols and have a basic understanding of written welding procedures.

Date Created: Work completed on 08/18/15

Faculty Developer(s)/Instructional Designers(s): John & Heidi Closson, Nathan Kramb

Employer/Industry Partner: Miller Welding Supply (Steve Hollis)

College Contact: Kenneth W. Flowers, PhD.  
 Phone: (269) 927-4103  
 Email: flowers@lakemichigancollege.edu

Additional Information/Comments:

This course existed at Lake Michigan College prior to the involvement in the TAACCCT grant. The development done linked to the grant was to incorporate Tooling U., an online curriculum vendor. Course adaptation was completed in August, 2015. The college’s Manufacturing Committee provided guidance regarding the adaptation of this course. Mach Mold, Liberty Steel, Custom Tool, Kelm Acubar, Shoreline Mold, M & I, JRR Automation, Hanson Mold, QME, K & M, Midwest Tool, West Michigan Tool, Maximum Mold, Michigan Mold, Griffin Tool, Accu Die, Eagle Technologies, and Standard Tool, are members of the Manufacturing Advisory Committee.

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# SMAW (Shielded Metal Arc Welding) I

## COURSE SYLLABUS

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### I. COURSE IDENTIFICATION

A.	Discipline	Welding (WELD)
B.	Title & Number	SMAW(Shielded Metal Arc Welding) I, WELD 102
C.	Credit Hours	2
D.	Contact Hours	3
E.	Instructor	
F.	Office Number	
G.	Telephone	
H.	Email address	
I.	Prerequisite(s)	M,R
J.	Semester & Academic Year	Fall, Spring

### II. TEXTBOOKS AND/OR EQUIPMENT /SUPPLIES

1. Texts                      Tooling U
2. Equipment                Safety Glasses

### III. COURSE DESCRIPTION FROM CATALOG

Covers the process commonly known as stick welding. Upon completion of this course, the student will be able to weld in all positions, read some basic weld symbols, and have a basic understanding of written welding procedures.

### IV. GENERAL EDUCATION AREA(S) MET

There are no General Education areas met by this course.

### V. GOALS AND OBJECTIVES

Upon completion the successful student is expected to:

Upon satisfactory completion of the tasks for this course, the student will demonstrate competency in the basic understanding and practical application of the principles of;

1. SMAW processes theory and safety.
2. SMAW welding equipment setup and maintenance.
3. Striking an arc and running a bead.
4. Welding fillet and groove welds in the flat position.
5. Welding fillet and groove welds in the horizontal position.
6. Welding fillet and groove welds in the vertical position.
7. Successfully complete AWS SMAW welding certification.

#### **VI. EXPECTED STUDENT OUTCOME(S)**

During the semester you may be asked to participate in Assessment of learning activities that will not be graded. Your instructor will use the information that you provide to better gauge your comprehension of course material: and, as appropriate, will modify how course material is presented in order to better prepare you to successfully complete graded assignments.

#### **VII. INSTRUCTIONAL METHODOLOGY**

The methods of instruction throughout this course include: lecture presentation, use of computer, written exercises, handouts, group discussions, question and answer sessions, and laboratory assignments.

#### **VIII. WRITING ACROSS THE CURRICULUM STRATEGY (*which may or may not be graded*)**

Students are responsible for correct spelling and punctuation on all written assignments. Tests and quizzes will contain some writing and word definition. Assigned writing projects will be relevant to all applied/specific subject materials taught in this class.

#### **IX. GRADING CRITERIA AND REQUIREMENTS**

Grading criteria is based on average points scored determined by labs, Tooling U assessments, and/or other assignments listed on assignment schedule. See grading scale below to identify averages.

#### **X. GRADING SCALE**

Grading Scale: 92 - 100 = **A** 84 - 91 = **B** 75 - 83 = **C** 69 - 74 = **D** 00 - 68 = **E**

**XI. MAKE-UP POLICY**

Make-up Policy will be at the discretion of the instructor.

**XII. ATTENDANCE POLICY/WITHDRAWAL POLICY**

Students are expected to attend all class sessions. If classes are missed, it is the student's responsibility to complete all assignments. A sign-in sheet will be used for attendance. Failure to sign-in may result in an absence. For withdrawal policy, see College catalog.

Mindful of the diverse student body that Lake Michigan College serves, and the varied belief systems that its students represent, the College will make a reasonable effort to accommodate students who need to be excused from classes for the observance of religious holidays. This policy does not apply to students who knowingly register for classes scheduled to meet on days that consistently conflict with their day of worship, e.g., a student who signs up for Saturday classes when the student normally worships on Saturday.

**XIII. ASSIGNMENT SCHEDULE**

The Assignment Schedule will be followed as closely as possible; however, changes may be made at the instructor's discretion.

*NOTE: Additional information regarding the course may be added to the syllabus at the discretion of the faculty member prior to distribution*



<b>WELD 102 SMAW Welding I Weekly Schedule</b>				
<b>Date:</b>	<b>Lectures/Discussion</b>	<b>Machine Demo &amp; Practice (Labs)</b>	<b>Peer Review</b>	<b>Tooling U HW. Class ID Class Name</b>
Week 1	<ul style="list-style-type: none"> <li>• Safety</li> <li>• Weld Nomenclature</li> <li>• Test Positions</li> <li>• Weld joint types</li> <li>• Basic Terminology</li> </ul>	<ul style="list-style-type: none"> <li>• SMAW Equipment Setup</li> <li>• Demo Stringer Bead</li> <li>• Labs – Pad of beads</li> </ul>		<ul style="list-style-type: none"> <li>- Arc Welding Safety 115</li> <li>- Fire Safety &amp; Prevention 110</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>• The 5 Essentials</li> <li>• Polarities</li> </ul>	<ul style="list-style-type: none"> <li>• Labs – Pad of beads, 1F</li> </ul>		<ul style="list-style-type: none"> <li>-Respiration Safety 195</li> <li>-Noise Reduction &amp; Hearing Conservation 170</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>• Quiz – SMAW Basics</li> </ul>	<ul style="list-style-type: none"> <li>• Labs – 1F, 2F</li> </ul>		<ul style="list-style-type: none"> <li>-What is Arc Welding 110</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>• SMAW Advantages/Disadvantages</li> <li>• Weave Patterns</li> </ul>	<ul style="list-style-type: none"> <li>• Labs – Finish 1F, 2F. Start 1G</li> </ul>		<ul style="list-style-type: none"> <li>-Arc Welding Processes 120</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>• Electrode Selection</li> </ul>	<ul style="list-style-type: none"> <li>• Labs – 1G, 2G</li> </ul>		<ul style="list-style-type: none"> <li>-Electrode Selection 270</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>• Electrode Selection (cont.)</li> </ul>	<ul style="list-style-type: none"> <li>• Labs – 1G, 2G</li> </ul>		<ul style="list-style-type: none"> <li>-Overview of Weld Types 130</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>• Midterm Exam</li> </ul>	<ul style="list-style-type: none"> <li>• Open Lab (catch up/practice)</li> </ul>		
Week 8	<ul style="list-style-type: none"> <li>• Procedures &amp; Qualification</li> </ul>	<ul style="list-style-type: none"> <li>• Labs – 3F</li> </ul>		<ul style="list-style-type: none"> <li>-SDS &amp; Hazard Communication 160</li> </ul>
Week 9	<ul style="list-style-type: none"> <li>• Procedures &amp; Qualification (cont.)</li> </ul>	<ul style="list-style-type: none"> <li>• Labs – Finish 3F</li> </ul>		<ul style="list-style-type: none"> <li>-Electrical Power for Arc Welding 140</li> </ul>
Week 10	<ul style="list-style-type: none"> <li>• Procedures &amp; Qualification Quiz</li> <li>• Weld Discontinuities &amp; Defects</li> </ul>	<ul style="list-style-type: none"> <li>• Labs – 3G</li> </ul>	Visual Inspection	<ul style="list-style-type: none"> <li>-Arc Welding Power Sources 260</li> <li>-SMAW Applications</li> </ul>

\* Assignment schedule may change without notice.

				210
Week 11	<ul style="list-style-type: none"> <li>Weld Discontinuities &amp; Defects (cont.)</li> <li>Weld Testing Methods</li> </ul>	<ul style="list-style-type: none"> <li>Labs – Finish 3G, start 4F</li> </ul>	Visual Inspection	-Visual Inspection of Welds 280
Week 12	<ul style="list-style-type: none"> <li>Introduction to Welding Symbols</li> </ul>	<ul style="list-style-type: none"> <li>Labs – Finish 4F, start 4G</li> </ul>	Visual Inspection	-Ferrous Metals for Welding 200
Week 13	<ul style="list-style-type: none"> <li>Continue Welding Symbols</li> <li>Review for Final Exam</li> </ul>	<ul style="list-style-type: none"> <li>Labs – Finish 4G, Catch up any incomplete projects</li> </ul>	Visual Inspection	-Nonferrous Metals for Welding 205
Week 14	<ul style="list-style-type: none"> <li>Final Exam</li> </ul>	<ul style="list-style-type: none"> <li>Open Lab (catch up/practice)</li> </ul>		

Students are encouraged to come in and use the lab during off hours in order to complete lab projects.

\* Assignment schedule may change without notice.



Subject Matter Expert (SME) Course Review Summary

College: Lake Michigan College

M-CAM Training Area:  CNC/Machining  Multi-Skilled/Mechatronics  Production Operation  Welding/Fabrication

Degree Program Name: Welding Technology

Title of Course: Shielded Metal Arc Welding I (SMAW)

Subject Matter Expert (SME) Reviewer Information

Name: Steve Hollis

Title: Sales Manager

Phone: 269 233 9419

Email: shollis@millerweldingsupply.com

Organization/Affiliation: Program Advisor

Attach Resume or provide credentials (showing years of experience and work experience that is relevant to course content):  
See attached.

Synopsis of Findings:

LMC's Shielded Metal Arc Welding I (SMAW) introduces students to stick welding. The college aligns the coursework with to AWS SENSE standards which helps students prepare for AWS skills assessments.

Reviewers Signature: \_\_\_\_\_

Date: 6-22-17

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Subject Matter Expert Course Review**

<b>1. Course Overview and Objectives</b>	<b>Exceptional</b>	<b>Satisfactory</b>	<b>Ineffective</b>
The goals and purpose of the course is clearly stated.	X		
Prerequisites and/or any required competencies are clearly stated.	X		
Learning objectives are specific and well-defined.	X		
Learning objectives describe outcomes that are measurable.	X		
Outcomes align to occupational focus (industry skills and standards).	X		
<b>Comments or recommendations:</b>  No recommendations. The goals and objectives of the program are clearly detailed and connected to American Welding Society (AWS) D1.1 Structural Steel welding code along with AWS SENSE standards.			
<b>2. Material and Resources</b>	<b>Exceptional</b>	<b>Satisfactory</b>	<b>Ineffective</b>
The instructional materials contribute to the achievement of the course learning objectives.	X		
The materials and resources meet/reflect current industry practices and standards.	X		
The instructional materials provide options for a variety of learning styles.	X		
Resources and materials are cited appropriately. If applicable, license information is provided.	X		
<b>Comments or recommendations:</b> No recommendations. The Welding program is using Tooling U, an online curriculum resource, to support the program content.			
<b>3. Learning Activities</b>	<b>Exceptional</b>	<b>Satisfactory</b>	<b>Ineffective</b>
Provide opportunities for interaction and active learning.	X		
Help understand fundamental concepts, and build skills useful outside of the learning object.	X		
Activities are linked to current industry practices and standards.	X		
<b>Comments or recommendations:</b> No recommendations			



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Subject Matter Expert Course Review**

4. Assessment Tools/Criteria for Evaluation	Exceptional	Satisfactory	Ineffective
The course evaluation criteria/course grading policy is stated clearly on syllabus.	X		
Measure stated learning objectives and link to industry standards.	X		
Align with course activities and resources.	X		
Include specific criteria for evaluation of student work and participation.	X		
<b>Comments and recommendations:</b> No additional recommendations. Course materials is linked to manufacturing and 3 <sup>rd</sup> party accreditation standards.			
5. Equipment/Technology	Exceptional	Satisfactory	Ineffective
Meets industry standards and needs.	X		
Supports the course learning objectives.	X		
Provides students with easy access to the technologies required in the course/module.	X		
<b>Comments and recommendations:</b> The grant provided the college the opportunity to replace outdated (over 17 years old) equipment. The current equipment meets and exceeds industry requirements.			

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**Michigan Coalition for Advanced Manufacturing  
Subject Matter Expert Course Review**

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# Steven Hollis Resume

Miller Welding Supply

shollis@millerweldingsupply.com

## Professional Experience

April 1996- Present Miller Welding Supply

Miller Welding Supply is a Leader in the welding supply and automation industry as well as industrial and specialty gases. Established in 1942, it is family owned and operated.

## Education

Southwestern Michigan College Mechanical Engineering

Lincoln Electric Certifications

- Distributor Welding Fundamentals
- Intermediate Distributor Training
- Advanced Distributor Training
- Lincoln Filler Metals
- Weld Processes
- VRTEX Virtual Reality Weld System
- Real Weld System

Miller Electric/Hobart Welding School Certificates

- Hobart Filler Metals
- Weld Processes and power sources

Conoca Training

- Product Training (regulators and manifold systems)

Koike Aronson Inc

- Product Training
- General Sales School