

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: Fabrication I

Course Description:

SUBJECT	TITLE	CONTACT HOURS	COURSE DESCRIPTION
WELD 101	FABRICATION I	45	Covers punching, shearing, sawing, drilling and cutting. Subassembly parts are produced using various equipment. The parts may be joined, by welding, to complete an assembly. Students work in a team environment to complete an assignment.

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.
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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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Fabrication I

COURSE SYLLABUS

I. COURSE IDENTIFICATION

A.	Discipline	Welding (WELD)
B.	Title & Number	Fabrication I WELD 101
C.	Credit Hours	2
D.	Contact Hours	3
E.	Instructor	
F.	Office Number	
G.	Telephone	
H.	Email address	
I.	Prerequisite(s)	
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 punching, shearing, sawing, drilling and cutting. Sub-assembly parts are produced using various equipment. The parts may be joined, by welding, to complete an assembly. Students work in a team environment to complete an assignment. The parts may be joined, by welding, to complete an assembly.

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:

1. Weld metals proficiently using different processes.
2. Follow safe practices in performing all welding tasks.

3. Interpret written, schematic and numerical data to carryout customer specifications of a proposed welding product; write technical work orders for fabrication.
4. Use standard industrial equipment to make quality repairs and fabrication on different types of metals.
5. Generate creative solutions to fabrication challenges.
6. Share in the responsibilities of maintaining a clean and orderly welding shop environment.
7. Use, maintain, and repair fabrication/welding shop tools.
8. Manage a student portfolio to include skills students have learned.

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 gage 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



WELD 101 Fabrication I Weekly Schedule				
Date:	Lectures/Discussion	Machine Demo & Practice (Labs)	Peer Review Optional	Tooling U HW. Class ID Class Name
Week 1	<ul style="list-style-type: none"> • Safety • Weld Nomenclature • Test Positions • Weld joint types • Basic Terminology 	<ul style="list-style-type: none"> • Lab Walk-Through 		-Fire Safety & Prevention 110 -Respiration Safety
Week 2	<ul style="list-style-type: none"> • Shop Equipment Overview • Oxy-Fuel Torch Operation 	<ul style="list-style-type: none"> • Oxyfuel Torch Demo • Lab – Oxyfuel Torch Operation/Welding 		-Noise Reduction & Hearing Conservation 170
Week 3	<ul style="list-style-type: none"> • Quiz – Oxy-Fuel Torch 	<ul style="list-style-type: none"> • Lab – Oxyfuel Torch Operation/Welding 		-Hand & Power Tool Safety 145
Week 4	<ul style="list-style-type: none"> • Oxy-Fuel Cutting Tip Sizes 	<ul style="list-style-type: none"> • Lab - Oxyfuel Torch Welding/Cutting 		-What is Oxyfuel Welding? 100
Week 5	<ul style="list-style-type: none"> • Plasma Cutting Concepts 	<ul style="list-style-type: none"> • Plasma Cutting Demo • Lab – Plasma Cutter Operation & Cutting 		-Oxyfuel Welding Safety
Week 6	<ul style="list-style-type: none"> • Metal Shear Operation • Drill Press & Band Saw Operation 	<ul style="list-style-type: none"> • Lab – Plasma Cutter Operation & Cutting (cont.) 		-Oxyfuel Welding Applications
Week 7	<ul style="list-style-type: none"> • Midterm Exam 	<ul style="list-style-type: none"> • Open Lab (catchup/practice) 		-Cutting Process 140
Week 8	<ul style="list-style-type: none"> • Hand Brake Operation • Bending Techniques • Chop Saw Operation 	<ul style="list-style-type: none"> • Lab – Chop/Band Saw Cutting, Bending Operations 		-Plasma Cutting 265
Week 9	<ul style="list-style-type: none"> • Basic Print Reading 	<ul style="list-style-type: none"> • Lab – Print Fabrication 		-Sawing Fundamentals 155
Week 10	<ul style="list-style-type: none"> • Oxyfuel Welding Techniques 	<ul style="list-style-type: none"> • Continue Print Fabrication 		-Band Saw Blade Selection 215

* Assignment schedule may change without notice

Week 11	<ul style="list-style-type: none"> • Open Lab 	<ul style="list-style-type: none"> • Open Lab (catchup/practice) 		-Confined Spaces 190
Week 12	<ul style="list-style-type: none"> • Intro to SMAW Process 	<ul style="list-style-type: none"> • SMAW Stringer Beads/Pads 		-Benchwork & Layout Operations 210
Week 13	<ul style="list-style-type: none"> • Intro to GMAW Process 	<ul style="list-style-type: none"> • GMAW Stringer Beads/Pads 		-Bending Fundamentals 120 -Die Bending Operations 130
Week 14	<ul style="list-style-type: none"> • Final Exam 	<ul style="list-style-type: none"> • Open Lab (catchup/practice) 		

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: Fabrication I

Subject Matter Expert (SME) Reviewer Information

Name: Steve Hollis

Title: Sales Manager

Phone: 269 233 9419

Email: shollis@millersupply.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:

Fabrication I is a strong introductory level welding course that introducing students to basic fabrication skills. The college aligns the coursework with to AWS SENSE standards which helps students prepare for AWS skills assessments.

Reviewers Signature

Date:

6-22-17

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

1. Course Overview and Objectives	Exceptional	Satisfactory	Ineffective
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		
Comments or recommendations: 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.			
2. Material and Resources	Exceptional	Satisfactory	Ineffective
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		
Comments or recommendations: No recommendations. The Welding program is using Tooling U, an online curriculum resource, to support the program content.			
3. Learning Activities	Exceptional	Satisfactory	Ineffective
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		

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

Comments or recommendations: No recommendations			
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		
Comments and recommendations: No additional recommendations. Course materials is linked to manufacturing and 3 rd 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		
Comments and recommendations: 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**

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