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## CIMWD-102 Syllabus

### *Weld Joint Design and Preparation – Material Cutting/Grinding/Fabrication*

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#### Recommended Textbook:

Welding: Principles and Applications 8<sup>th</sup> Edition

#### Course Description:

Explores the set-up and use of the Oxy/Fuel cutting torch, the Oxy/Fuel line cutter, Plasma Arc cutting, safety protocols, and proper use of power tools in the welding lab. Also explores how to assemble various weld joints. Laboratory activities.

#### Course Topics

1. Manuel oxy/fuel cutting.
2. Plasma arc cutting.
3. Power tool safety and use.
4. Fabrication.
5. Oxy/fuel line cutter.

#### Learning Objectives

1. Demonstrate proper set-up and use of an Oxy/Fuel cutting outfit.
2. Demonstrate proper set-up and use of an Oxy/Fuel line cutter.
3. Demonstrate proper set-up and use of a Plasma Arc Cutter.
4. Demonstrate proper safety and use of power tools.
5. \*Demonstrate fillet and groove joint assembly.

#### Competency-Based Education

The Welding Program at Henry Ford College uses a system of learning called Competency-Based Education (CBE). This competency-based welding program is centered on teaching specific job skills required in industry and mastery of these skills.

CBE is a very personalized teaching system that has the following characteristics:

- Ongoing Program
- Open entry - flexible schedule
- Credit granted for work completed
- Evaluation (grades) based on performance
- Fixed content in each course
- Variety of student levels served in each class
- Work at your own pace
- Live or taped lectures and demonstrations





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This competency-based program has several very important benefits for you:

- You will be given a list of the skills and knowledge needed to complete the program successfully.
- Your performance will not be compared to that of other students, but to a fixed standard, which has been set for the program.
- If you have already acquired certain skills required for this program, you may simply demonstrate this and begin focusing your attention on new skills.
- You will be able to review learning materials several times in order to attain the skill or knowledge.
- If you are able to attain the skills easily, you may progress through the program faster than the average person. If you progress through the program faster than average, you can graduate in a shorter time frame.

#### **What's Required of You:**

For this system to work, you will be expected to:

1. Assume the responsibility for your own learning. Your instructor will give you assistance, but the actual responsibility for learning rests with you, the student.
2. Utilize the materials provided for you. The program's resources have been carefully chosen and developed to help you learn.
3. Devote your energy to attaining the skills and knowledge required for your program.

#### **The Instructor's Role:**

The instructors in HFC's Welding Program work with students individually and guide them through the learning process with the help of many different learning resources. In CBE, instructors are often referred to as learning managers because they manage the activities in the program and facilitate the learning process. If you are having difficulty, you should go to your instructor with your problem. The instructor's goal is to find the most effective way to help you learn the tasks in the program.

#### **How your grade is computed in this program:**

If your class is a designated lecture module, your grade will be based off of an exit quiz. When a passing grade is complete, you will be able to move on to the next module.

If this class is a designated lab module, your grade will be based off of a grading matrix. You will evaluate your competencies along with the instructor. You will need a 3-ring binder to keep the finished and signed grading sheets. Those will be turned in when all projects are finished for the module you are taking. The final grade will be entered when these are reviewed.





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#### **Welding Technology Grading Checklist**

Check	Criteria	Points
	Safety (10 points)	
	PPE	
	Equipment in working order	
	Lab rules followed	
	Work areas cleaned and tools returned	
	Welding, Cutting, & Fabrication Set-Up (10 points)	
	Welding machine set correctly	
	Cutting machines set correctly	
	Fabrication machines set correctly	
	Followed Instructions (10 points)	
	Parts cut to correct size	
	Joints assembled correctly	
	Position of weld was correct	
	Correct filler metal was used	
	Visual Inspection of weld (20 points)	
	Bead width	
	Welding angle	
	Arc gap if applicable	
	Porosity	
	Fillet weld size if applicable	
	Groove weld under fill	
	Joint penetration	
	Incomplete fusion	
	Cracks	
	Cold lap	
	Undercut	
	Arc strikes	
	Fillet weld contour if applicable	
	Inclusions	
	Groove weld height (overfill)	





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**Corrective Action Taken:**

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Student: \_\_\_\_\_

Instructor: \_\_\_\_\_

**Grading Scale:**

- A+ = 100-98
- A = 97-93
- A- = 92-90
- B+ = 89-87
- B = 86-83
- B- = 82-80
- C+ = 79-77
- C = 76-73
- C- = 72-70
- D+ = 69-67
- D = 66-63
- D- = 62-60
- E = 59-below

**Chapters:**

8, 22, 23, 31





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**NOTE: (OFC) PROCESS TACK WITH GMAW**

UNLESS OTHERWISE SPECIFIED:	DRAWN	NAME	DATE
DIMENSIONS ARE IN INCHES	CHECKED	J.SIBERT	2/12/2015
TOLERANCES:	ENG. APPR.		
FRACTIONAL: $\pm$	MFG APPR.		
ANGULAR: MACH $\pm$ BEND $\pm$	Q.A.		
TWO PLACE DECIMAL $\pm$	COMMENTS:		
THREE PLACE DECIMAL $\pm$			
INTERPRET GEOMETRIC TOLERANCING PER:			
MATERIAL			
FINISH			
DO NOT SCALE DRAWING			

TITLE: CIMWD-102 Project 1

SIZE DWG. NO. REV  
**A** PART 1 0

SCALE: 1:2 WEIGHT: SHEET 1 OF 1

1 2 3 4 5

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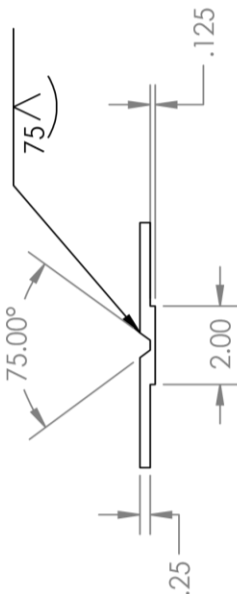
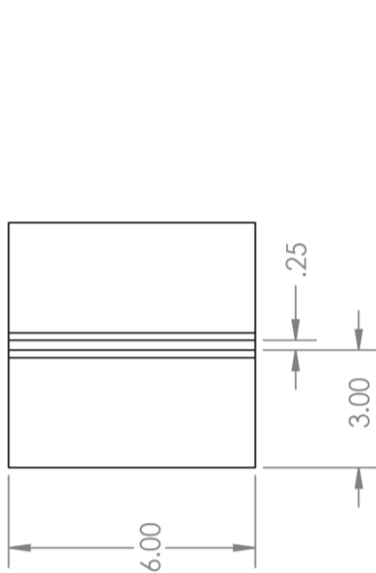
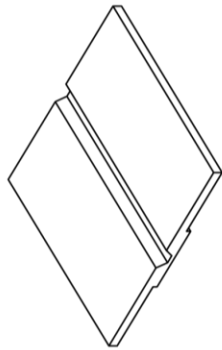
USED ON APPLICATION





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**NOTE:** OFC LINE BURNER  
37 1/2° BEVEL CUT  
1/8 BACKER WITH PAC PROCESS  
Tack with GMAW



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ANGULAR: MACH ± BEND ±	MFG APPR.		
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THREE PLACE DECIMAL ±	COMMENTS:		
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SIZE DWG. NO. <b>A PART 2</b> REV <b>0</b>	SCALE: 1:4 WEIGHT:	1





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### Weld Joint Design and Preparation – Material Cutting/Grinding/Fabrication

**NOTE:** OFC PROCESS  
Tack with GMAW

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DIMENSIONS ARE IN INCHES	J. SIBERT	2/12/2015	CIMWD 102 Project 3	
TOLERANCES:				
FRACTIONAL: BEND :	DRAWN			
ANGULAR: MACH: BEND :	CHECKED			
TWO PLACE DECIMAL :	ENG APPR.			
THREE PLACE DECIMAL :	MFG APPR.			
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			
MATERIAL	COMMENTS:			
FINISH				
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SIZE DWG. NO. REV  
**A PART 3 0**

SCALE: 1:2 WEIGHT: SHEET 1 OF 1





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		CHECKED	J. SIBERT	2/19/2015
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		SIZE DWG. NO. REV <b>A</b> PART 4 0		SCALE: 1:2 WEIGHT: SHEET 1 OF 1







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## Weld Joint Design and Preparation – Material Cutting/Grinding/Fabrication

				NAME	DATE	TITLE: CIMWD-102 Project 5	SIZE	DWG. NO.	REV
				J.SIBERT	2/19/2015				
UNLESS OTHERWISE SPECIFIED:				DRAWN	CHECKED	ENG APPR.	MFG APPR.	Q.A.	COMMENTS:
DIMENSIONS ARE IN INCHES				FRACTIONAL: $\frac{1}{16}$ $\frac{1}{8}$ $\frac{1}{4}$ $\frac{3}{8}$ $\frac{1}{2}$ $\frac{5}{8}$ $\frac{3}{4}$ $\frac{7}{8}$ $1$ ANGULAR: $\pm$ MACH $\pm$ BEND $\pm$ TWO PLACE DECIMAL $\pm$ THREE PLACE DECIMAL $\pm$					
TOLERANCES:				INTERPRET GEOMETRIC TOLERANCING PER:					
MATERIAL				MATERIAL					
FINISH				FINISH					
DO NOT SCALE DRAWING				DO NOT SCALE DRAWING					
APPLICATION				APPLICATION					
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TOLERANCES:		DRAWN	CHECKED
FRACTIONAL: ±		ENG. APPR.	MFG APPR.
ANGULAR: MACH ±		G.A.	COMMENTS:
TWO PLACE DECIMAL ±			
THREE PLACE DECIMAL ±			
INTERPRET GEOMETRIC TOLERANCING PER:			
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TITLE: **CIMWD-102 Project 6**

SCALE: 1:2 WEIGHT: SHEET 1 OF 1





# CIMWD-102 Syllabus

## Weld Joint Design and Preparation – Material Cutting/Grinding/Fabrication

	NAME	DATE	TITLE: <b>CIMWD-102 Project 7</b>	
	J.SIBERT	2/19/2015		
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	ENG APPR.	MFG APPR.	<b>A</b>	<b>0</b>
	Q.A.	COMMENTS:	DWG. NO. <b>PART 7</b>	
	INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL FINISH		SCALE: 1:2	WEIGHT:
DO NOT SCALE DRAWING			1	
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