

**Erie County Technical School  
Metal Fabrication Duty/Task List**

This program is accredited by the American Welding Association (AWS).				Pennsylvania Standards				NOCTI Alignment Test Code 4172	
Duty Area and Task #	Content Areas, Course Titles and Task Statements	Course Number	National Skill Standards	Math	Reading	Writing	Career Education & Work	Written Test	Performance Test
<b>00 - FUNDAMENTALS</b>									
<b>A</b>	<b>FOUNDATIONS OF METAL FABRICATION</b>	<b>MTF101</b>							
A001	Identify the goals and objectives of the Metal Fabrication Program	MTF101	1.1	N/A	1.5.5.D	1.2.5.B	13.1.3A,B,C, D		
A002	Understand the evaluation criteria which will determine quarterly and final grades	MTF101	1.1	N/A	N/A	1.2.5.B	N/A		
A003	Develop a respect for shop rules and practices	MTF101	1.2	N/A	N/A	1.1.5.D	N/A		
A004	Become familiar with the school regulations and general expected overall behavior patterns	MTF101	3.2.1.1	N/A	N/A	1.2.5.B	N/A		
A005	Be familiar with, and learn to respect the use of safety glasses, face shields, hearing protection, safety shoes and all other basic types of safety-related protective equipment	MTF101	4.1	N/A	N/A	1.2.5.B	N/A		
A006	Demonstrate the safety rules and procedures for the individual tools and equipment they are to operate	MTF101	3.2.1.1	N/A	N/A	1.2.5.B	N/A		
A007	Participate in fire drills, the proper use of fire extinguishers and the locations of and intended use of panic buttons	MTF101	6.1	N/A	N/A	1.2.5.B	N/A		
A008	Understand the proper procedures and regulations regarding the possibility of a tornado alert and other forms of possible emergency situations such as: Loss of electricity, gas leaks, student accidents, bomb scares, snow storms, loss of water pressure, etc	MTF101	4.1	N/A	N/A	1.1.5.	N/A		
A009	Participate in leadership class	MTF101	N/A	N/A	N/A	1.1.5.D	N/A		
<b>PFS109</b>	<b>LEADERSHIP</b>								
<b>PFS110</b>	<b>LEADERSHIP</b>								
<b>PFS209</b>	<b>TOTAL QUALITY PRINCIPLES</b>								
<b>PFS211</b>	<b>TOTAL QUALITY PRINCIPLES</b>								
<b>PFS309</b>	<b>BUSINESS PRINCIPLES</b>								
<b>PFS310</b>	<b>BUSINESS PRINCIPLES</b>								
<b>10 - TOOLS AND EQUIPMENT</b>									
<b>B</b>	<b>TOOLS &amp; EQUIPMENT I</b>	<b>MTF111</b>							
B001	Understand hand tools & machines and their operation and theory	MTF111	4.2	N/A	1.5.5.B	1.2.5B	13.1.8F	X	X
B002	Select and properly use most of the basic hand tools & machines related to the Metal Fabrication trade	MTF111	4.2	N/A	N/A	N/A	N/A	X	X
B003	Properly cut, file and grind all types of metals	MTF111	4.3	CC.2.3.HS.A.14	N/A	1.2.5.A	N/A	X	X
<b>C</b>	<b>TOOLS &amp; EQUIPMENT II</b>	<b>MTF112</b>							
C001	Use of power operated hand tools	MTF112	4.3	CC.2.1.6.E.1	1.5.5.B	1.2.5.B	N/A	X	X
<b>D</b>	<b>POWER TOOLS AND MACHINES</b>	<b>MTF211</b>							
D001	Properly operate the iron worker, spot welder and power shears	MTF211	4.5	CC.2.1.6.E.1	1.4.7	N/A	N/A		
D002	Properly operate both the light duty and heavy duty press brake	MTF211	4.5	CC.2.1.6.E.1	1.4.7	N/A	N/A		

**Erie County Technical School  
Metal Fabrication Duty/Task List**

This program is accredited by the American Welding Association (AWS).				Pennsylvania Standards				NOCTI Alignment Test Code 4172	
Duty Area and Task #	Content Areas, Course Titles and Task Statements	Course Number	National Skill Standards	Math	Reading	Writing	Career Education & Work	Written Test	Performance Test
<b>20 - PRINCIPLES OF MEASURING/LAYOUT</b>									
<b>E</b>	<b>MEASUREMENT &amp; LAYOUT</b>	<b>MTF121</b>							
E001	Properly manipulate and read all basic types of measuring instruments	MTF121	3.2.1.1	CC.2.3.HS.A.14	N/A	1.1.3.A	13.1.8F	X	X
E002	Understand fractions, decimals, metrics, ratio x proportions, and area x volume	MTF121	3.2.1.1	CC.2.1.7.D.1	N/A	N/A	N/A	X	X
E003	Understand the proper use of basic layout tools	MTF121	3.2.1.1	CC.2.3.HS.A.14	1.5.5.A	1.2.8.B	N/A	X	X
E004	Understand the applied geometry necessary for simple pattern layout	MTF121	3.2.1.1	CC.2.3.HS.A.14	N/A	1.2.5.B	13.1.8F		
<b>F</b>	<b>PATTERN DEVELOPMENT I</b>	<b>MTF122</b>							
F001	Understand & draw triangulation development drawings	MTF122	4.6	CC.2.3.HS.A.14	N/A	1.2.5.B	13.1.8F		
F002	Understand & draw parallel development drawings	MTF122	4.6	CC.2.3.HS.A.14	N/A	1.2.5.B	N/A		
<b>G</b>	<b>PATTERN DEVELOPMENT II</b>	<b>MTF221</b>							
G001	Develop precision layout patterns	MTF221	4.6	CC.2.3.HS.A.14	N/A	1.2.5.B	N/A		
G002	Understand triangulation development	MTF221	4.6	CC.2.3.HS.A.6	N/A	1.2.5.B	N/A		
G003	Understand radial line development	MTF221	4.6	CC.2.3.HS.A.9	N/A	1.2.5.B	N/A		
<b>H</b>	<b>FABRICATION DESIGN</b>	<b>MTF222</b>							
H001	Construct a variety of projects with heavy and light metals	MTF222	3.2.1.1	CC.2.3.HS.A.14	1.4.8	N/A	N/A		
H002	Work as a team to complete metal fabrication projects.	MTF222	3.2.1.1	N/A	1.4.8	N/A	N/A		
<b>I</b>	<b>PRINCIPLES OF DESIGN FOR SPECIFIC OPERATIONS</b>	<b>MTF321</b>							
I001	Plan jobs, draft, and make materials list, quote time and cost.	MTF321	4.6	CC.2.3.HS.A.14 CC.2.1.HS.F.4	1.4.9	1.2.8	13.4.11		
I002	Construct a variety of projects with heavy and light metals	MTF321	3.2.1.1	CC.2.3.HS.A.14	1.4.9	1.2.8	13.3.5		
I003	Have a basic understanding of the estimating of jobs and the purchasing of materials related to the total Fabrication trade	MTF321	4.6	CC.2.3.HS.A.14	1.4.9	1.2.8	13.4.11		
<b>J</b>	<b>PATTERN DEVELOPMENT III</b>	<b>MTF322</b>							
J001	Solve, develop and layout complex patterns for Metal Fabrication	MTF322	4.6	CC.2.3.HS.A.14	N/A	1.1.3D	N/A		
<b>K</b>	<b>SENIOR PROJECT DEVELOPMENT</b>	<b>MTF323</b>							
K001	Design, Draft, quote, price, and order materials for senior project	MTF323	3.2.1.1	CC.2.1.HS.F.4	1.5.8.C	1.2.8.C	N/A		
<b>30 - WELDING PROCESSES</b>									

**Erie County Technical School  
Metal Fabrication Duty/Task List**

<b>This program is accredited by the American Welding Association (AWS).</b>				<b>Pennsylvania Standards</b>				<b>NOCTI Alignment Test Code 4172</b>	
<b>Duty Area and Task #</b>	<b>Content Areas, Course Titles and Task Statements</b>	<b>Course Number</b>	<b>National Skill Standards</b>	<b>Math</b>	<b>Reading</b>	<b>Writing</b>	<b>Career Education &amp; Work</b>	<b>Written Test</b>	<b>Performance Test</b>
<b>L</b>	<b>SHIELDED METAL ARC WELDING</b>	<b>MTF131</b>							
	Understand basic electricity as it applies to the welding and safety aspects of the Metal Fabrication trade	MTF131	9.2	N/A	1.5.5.A	1.2.5.B	13.1.8F	X	X
L002	Demonstrate SMAW flat and horizontal welding application	MTF131	9.2	N/A	N/A	1.2.5.B	N/A	X	X
L003	Demonstrate SMAW vertical and overhead welding application	MTF131	9.2	N/A	N/A	1.2.5.B	N/A	X	X
<b>M</b>	<b>INTRODUCTION TO OXYACETYLENE CUTTING</b>	<b>MTF133</b>							
M001	Understand the nature of fuel gas (acetylene) and oxygen	MTF133	9.3	N/A	1.5.5.B	1.2.5.B	13.1.8F	X	X
M002	Properly maintain pressure regulators and related equipment	MTF133	10.7	N/A	1.5.5.B	1.2.5.B	N/A	X	X
M003	Handle safely gas cylinders	MTF133	10.8	N/A	1.5.5.B	1.2.5.B	N/A	X	
M004	Connect and disconnect manifold systems	MTF133	10.9	N/A	1.5.5.A	1.2.5.B	N/A	X	X
M005	Properly set-up and adjust oxy-acetylene cutting equipment	MTF133	10.4	N/A	1.5.5.A	1.2.5.B	N/A	X	X
M006	Understand the cutting positions used for various hand cutting operations	MTF133	10.2	N/A	N/A	N/A	N/A	X	X
M007	Demonstrate the proper procedure for machining cutting operations	MTF133	10.5	CC.2.3.HS.A.14	N/A	1.2.5.B	N/A	X	X
M008	Recognize the safety aspects of oxy-acetylene cutting operations	MTF133	10.5	N/A	1.5.5.B	1.2.5.B	N/A	X	X
M009	Understand the theory involved in proper oxy-fuel brazing	MTF133	9.5	N/A	1.5.5.A	1.2.5.B	N/A	X	X
M010	Properly set-up and adjust oxy-fuel brazing equipment	MTF133	9.3	N/A	N/A	1.2.5.B	N/A	X	X
M011	Braze a variety of ferrous metals	MTF133	9.3	N/A	N/A	1.2.5.B	N/A	X	X
<b>N</b>	<b>GAS METAL ARC WELDING I</b>	<b>MTF231</b>							
N001	Understand the theory involved in MIG welding	MTF231	3.2.1.1	N/A	1.5.5.B	1.2.5.B	N/A	X	X
N002	Properly set-up and adjust TIG and MIG welding equipment	MTF231	9.2	N/A	1.5.5.B	1.2.5.B	N/A	X	X
<b>O</b>	<b>GAS METAL ARC WELDING II</b>	<b>MTF232</b>							
O001	Properly weld heavy and light gauge metals	MTF232	9.2	N/A	N/A	N/A	N/A	X	X
<b>P</b>	<b>PLASMA ARC CUTTING/CARBON ARC CUTTING</b>	<b>MTF233</b>							
P001	Understand the principals of PAC	MTF233	9.3	N/A	N/A	N/A	N/A	X	
P002	Demonstrate the operation of automated PAC	MTF233	10.5	N/A	N/A	N/A	N/A	X	
P003	Demonstrate the operation of hand operated PAC	MTF233	10.2	N/A	N/A	N/A	N/A	X	
<b>Q</b>	<b>GAS TUNGSTEN ARC WELDING I</b>	<b>MTF331</b>							
Q001	Understand the theory related to the GTAW welding processes	MTF331	9.2	N/A	1.5.5.B	1.2.5.B	13.1.8F	X	X
Q002	Set-up and adjust basic GTAW welding equipment	MTF331	9.2	N/A	N/A	1.2.5.B	N/A	X	X
Q003	Perform GTAW welds, in the flat & horizontal positions	MTF331	9.2	N/A	N/A	1.2.5.B	N/A	X	X
<b>R</b>	<b>GAS TUNGSTEN ARC WELDING II</b>	<b>MTF332</b>							
R001	Perform GTAW welds in the Vertical & overhead positions	MTF332	9.2	N/A	N/A	1.2.5.B	N/A	X	X
R002	Use a weld positioner in welding	MTF332	9.2	N/A	N/A	N/A	N/A	X	X

**Erie County Technical School  
Metal Fabrication Duty/Task List**

<b>This program is accredited by the American Welding Association (AWS).</b>				<b>Pennsylvania Standards</b>				<b>NOCTI Alignment Test Code 4172</b>	
<b>Duty Area and Task #</b>	<b>Content Areas, Course Titles and Task Statements</b>	<b>Course Number</b>	<b>National Skill Standards</b>	<b>Math</b>	<b>Reading</b>	<b>Writing</b>	<b>Career Education &amp; Work</b>	<b>Written Test</b>	<b>Performance Test</b>
<b>S</b>	<b>FLUX CORE ARC WELDING I</b>	<b>MTF333</b>							
S001	Understand the theory related to the FCAW welding processes	MTF333	9.2	N/A	1.5.5.C	1.2.5.B	N/A	X	
S002	Set-up and adjust basic FCAW welding equipment	MTF333	9.2	N/A	N/A	1.2.5.B	N/A	X	
S003	Perform FCAW welds, in the flat & horizontal positions	MTF333	9.2	N/A	N/A	N/A	N/A	X	
<b>T</b>	<b>FLUX CORE ARC WELDING II</b>	<b>MTF334</b>							
T001	Perform FCAW welds in the Vertical & overhead positions	MTF334	9.2	N/A	N/A	N/A	N/A	X	
T002	Use a weld positioner in welding	MTF334	9.2	N/A	N/A	N/A	N/A	X	
<b>40 - FABRICATION PROJECTS</b>									
<b>U</b>	<b>FABRICATION OF LIGHT GAUGE PROJECTS I</b>	<b>MTF141</b>							
U001	Fabricate duct fittings	MTF141	N/A	CC.2.3.HS.A.14	N/A	1.2.5.B	13.1.8F		
<b>V</b>	<b>FABRICATION OF LIGHT GAUGE PROJECTS II</b>	<b>MTF142</b>							
V001	Fabricate sheet metal projects	MTF142	N/A	CC.2.3.HS.A.14	N/A	1.2.5.B	N/A		
<b>W</b>	<b>SHEET FABRICATION I</b>	<b>MTF241</b>							
W001	Construct a variety of projects with heavy and light metals	MTF241	N/A	CC.2.3.HS.A.14	N/A	N/A	N/A		
<b>X</b>	<b>SHEET FABRICATION II</b>	<b>MTF242</b>							
X001	Construct a variety of projects with heavy and light metals	MTF242	N/A	CC.2.3.HS.A.14	N/A	N/A	N/A		
<b>Y</b>	<b>STRUCTURAL FABRICATION</b>	<b>MTF243</b>							
Y001	Safely manipulate heavy objects	MTF243	4.3	N/A	N/A	1.2.5.B	N/A		
Y002	Demonstrate proficiency in the tapping, notching and cutting of heavy gauge metals and structural steel	MTF243	4.2	CC.2.3.HS.A.14	N/A	1.2.5.B	N/A		
<b>Z</b>	<b>BEND ALLOWANCES</b>	<b>MTF244</b>							
Z001	Calculate bend allowances	MTF244	3.2.1.2	CC.2.3.HS.A.9	N/A	N/A	13.1.8F		
<b>AA</b>	<b>ADVANCED FABRICATION</b>	<b>MTF341</b>							
AA01	light metals with structural steel	MTF341	9.2	CC.2.3.HS.A.14	N/A	1.2.5.B	N/A		
AA02	Have a basic understanding of the estimating of jobs and the purchasing of material related to the Metal Fabrication trade	MTF341	4.6	CC.2.4.HS.B.1	1.5.5.C	1.2.5.B	N/A		
<b>BB</b>	<b>SENIOR PROJECT FABRICATION</b>	<b>MTF342</b>							
BB01	Fabricate senior project	MTF342	9.2	CC.2.3.HS.A.14	N/A	N/A	N/A		
<b>50 - METALLURGY</b>									
<b>CC</b>	<b>INTRODUCTION TO METALLURGY</b>	<b>MTF151</b>							

**Erie County Technical School  
Metal Fabrication Duty/Task List**

<b>This program is accredited by the American Welding Association (AWS).</b>				<b>Pennsylvania Standards</b>				<b>NOCTI Alignment Test Code 4172</b>	
<b>Duty Area and Task #</b>	<b>Content Areas, Course Titles and Task Statements</b>	<b>Course Number</b>	<b>National Skill Standards</b>	<b>Math</b>	<b>Reading</b>	<b>Writing</b>	<b>Career Education &amp; Work</b>	<b>Written Test</b>	<b>Performance Test</b>
CC01	Learn to recognize many of the common materials used in Metal Fabrication	MTF151	2.1	N/A	1.5.5.A	1.2.5.A	13.1.8F	X	
CC02	Determine the difference between ferrous and non-ferrous metals	MTF151	2.1	N/A	1.5.5.A	1.2.5.A	N/A	X	
CC03	Understand the causes of corrosion and the methods used to prevent corrosion	MTF151	9.7	N/A	1.5.5.A	1.2.5.B	N/A	X	
CC04	Investigate and understand the atomic structure of metals	MTF151	9.7	N/A	1.5.5.C	1.2.8.B	N/A	X	
<b>DD</b>	<b>METAL CHARACTERISTICS &amp; PROPERTIES</b>	<b>MTF351</b>							
DD01	Recognize the differences between materials	MTF351	4.6	N/A	N/A	N/A	13.4.8	x	x
DD02	Identify different materials	MTF351	4.6	N/A	N/A	N/A	13.4.8	x	x
DD03	Testing materials	MTF351	4.6	N/A	N/A	N/A	13.4.8		
DD04	Special welding techniques	MTF351	4.6	N/A	N/A	N/A	13.4.8	x	x
	<b>60 - FASTENERS</b>								
<b>EE</b>	<b>INTRODUCTION TO FASTENERS</b>	<b>MTF161</b>							
EE01	Select the proper size and type of fastener for specific applications	MTF161		CC.2.3.HS.A.14	1.5.5.B	1.2.5.B	N/A		
	<b>70 - BLUEPRINT READING</b>								
<b>FF</b>	<b>INTRO TO BLUEPRINT READING</b>	<b>MTF171</b>							
FF01	Understand the orthographic projection method of blueprints	MTF171	3.2.1.2	N/A	1.5.5.B	1.2.5.B	13.1.8F	X	X