Education and Workforce Development Cabinet

CURRICULUM MAP

School:	**Lake Cumberland ATC-Adair**	**Program:**	**Welding Technology**
Teacher:	**Barney Taylor**	**School Year:**	**2020-2021**
KCTCS Course Number:	**WLD 100 and 101**	**KY Tech Course Name**	**Oxy Fuel Systems**
Length of Course:	**Semester**	**Length of Period**	**85 Minutes**
High School Credit(s)	**1**		

<table>
<tr>
<td>Unit 1
Week 1
Days
1-5</td>
<td>Lab Equipment and Safety</td>
<td>
TASKS
<table>
<tr><th>Date Taught
Wks/Month</th><th>Objectives</th><th>Content Tasks (#'s and E, I, C), Activities, Assessment</th><th>Essential Questions</th><th>Core Content Skill Standards</th></tr>
</table>
1.WLD 100 TASK 1-Practice oxy-fuel welding safety procedures

ACTIVITIES
1.Students will go through class orientation
2.Course syllabus, class and lab rules read and signed by students and parents
3. Show introductory video on oxy-fuel welding and cutting and welding processes
4.Show power point on lab safety and lecture
5.Show video on MSDS understanding and use and lecture
6.Show video on Blood borne pathogens and lecture

ASSESSMENT
1.Written test on lab and general safety practices
2.Written test on MSDS
3.Written test on blood borne pathogens
</td>
<td>
1. Who is the person most responsible for your safety?
2. What is the proper Personal Protective Equipment for Oxy Fuel welding and cutting?
3. Why is it important to have procedures in place for emergency situations?
4. What is Oxy-fuel welding and cutting?
</td>
<td>
Skill Standards:
AD002
Demonstrate ability to learn new process steps
OD008
Identify the safety and proper use of the tools of the trade
EA009
Comply with safety guidelines
Core Content:
RST-2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

RST-4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they
</td>
</tr>
</table>

				are used in a specific scientific or technical context relevant to *grades 11–12 texts* **RST-7**. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
Unit 1 Week 1 Days 6-10	Lab Equipment and Safety	**TASKS** 1.WLD 100 TASK 1-Practice oxy-fuel welding safety procedures **ACTIVITIES** **1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles** **2.Show video on lab safety and lecture** **3.Show video on fire safety and lecture** **4.Show video on personal protective equipment and lecture** **5.Take students on a tour of shop and identify exits, fire extinguishers, MSDS book, and all pieces of equipment** **ASSESSMENT** **1.Written test on lab and equipment safety** **2.Written test on fire safety** **3.Written test on personal protective equipment**	1.Who is the person most responsible for your safety? 2.What is the proper Personal Protective Equipment for Oxy Fuel welding and cutting? 3.Why is it important to have procedures in place for emergency situations?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1

				Prove that all circles are similar G-GMD-3 Use volume formulas for cylinders, pyramids,cones, and spheres to solve problems.
Unit 2 Week 3 Days 11-15	Shop equipment safety and use	**TASKS** **WLD 100 TASK 2-**Use shop equipment and tools **ACTIVITIES** **1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles** 2. Show power point presentation on equipment safety and lecture 3. Show power point presentation on hand tool and power tool safety and lecture 4. Instructor will give demonstration of bandsaw and ironworker 5.Students will each use bandsaw and ironworker to cut metal. **ASSESSMENT** 1.Written test will be given on shop equipment and safety 2.Written test will be given on hand tool and power tool use and usage 3.Instuctor will give grade for the safe and proper use of bandsaw and ironworker	1.How do I properly use the handtools in the shop? 2.How do I properly use a bandsaw and ironworker? 3. What is the proper way to cut metal on a bandsaw and ironworker?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1 G-GMD-3
Unit 3 Week 4 Days 16-20	Oxy-Fuel equipment safety and use	**TASKS** **WLD 100 TASK 1-**Practice oxy-fuel welding safety procedures WLD 101 TASK 2-Set up oxy-fuel equipment for cutting **ACTIVITIES** **1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles.**	1. What are the parts of an oxy-fuel torch system? 2. How do I properly set up	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008

		2.Show Lincoln Electric power point presentation on oxy-fuel equipment, setup, and safety. 3.Demonstrate proper use of personal protective equipment to students for the oxy-fuel process 4.Instructor will set up and shut down an oxy- fuel torch system for students and lecture. 5. Students will each set up and shut down an oxy-fuel torch system. **ASSESSMENT** **1. A written test will be given on oxy-fuel safety.** **2. A written test will be given on proper set up and shut down of an oxy-fuel torch system.** **3. Instructor will give students a grade on the proper set up and shut down of an oxy-fuel torch system.**	a torch for use? 3. What are the dangers of using an oxy-fuel torch and how do I prevent them?	Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1 G-GMD-3
Unit 4 Week 5 Days 21-25	Oxy-Fuel cutting of steel plate	**TASKS** WLD 100 TASK 3-Apply principles of oxy-fuel systems to cut, weld, braze, and braze-weld with oxy-fuel WLD 100 TASK 5-Setup components of oxy-fuel equipment and setup procedures WLD 100 TASK 6-Apply oxy-fuel cutting applications and procedures WLD 101 TASK 1-Practice and perform shop procedures safely. WLD 101 TASK 2-Set up oxy-fuel equipment for cutting WLD 101 TASK 3-Cut carbon steel plate and pipe **ACTIVITIES** **1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles.** 2. Instructor will demonstrate to students how to properly clean a torch tip. 3. Instructor will lecture about proper torch tip size selection. 4. Students will mark straight lines on ¼" steel plate and cut with an oxy-fuel torch. 5. Students will mark straight lines on ½" steel plate and cut with an oxy-fuel torch. **ASSESSMENT**	1. How do I properly set up a torch for use? 2. How do I hold a torch to make a straight cut? 3. What size tip do I need to cut ¼" and ½" steel plate?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1 G-GMD-3

		1.Instructor will grade students on proper set up and shut down of oxy-fuel torch and proper safety techniques. **2.Instructor will grade students on straightness and quality of cuts on ¼" and ½" steel plate.**		
Unit 4 Week 6 Days 26-30	Oxy-Fuel cutting of steel plate	**TASKS** WLD 100 TASK 3-Apply principles of oxy-fuel systems to cut, weld, braze, and braze-weld with oxy-fuel WLD 100 TASK 5-Setup components of oxy-fuel equipment and setup procedures WLD 100 TASK 6-Apply oxy-fuel cutting applications and procedures WLD 101 TASK 1-Practice and perform shop procedures safely. WLD 101 TASK 2-Set up oxy-fuel equipment for cutting WLD 101 TASK 3-Cut carbon steel plate and pipe **ACTIVITIES** **1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles.** 2. Students will mark straight lines on 1/8" steel plate and cut with an oxy-fuel torch. 3. Students will mark straight lines on 1" steel plate and cut with an oxy-fuel torch. 4. Students will mark 2" circles on ¼" steel plate and cut with an oxy-fuel torch. 5. Students will mark 2" circles on ½" steel plate and cut with an oxy-fuel torch. **ASSESSMENT** **1.Instructor will grade students on proper set up and shut down of oxy-fuel torch and proper safety techniques.** **2.Instructor will grade students on straightness and quality of cuts on 1/8", ¼",1/2", and 1" steel plate.**	1. How do I properly set up a torch for use? 2. How do I hold a torch to make a straight cut? 3. What size tip do I need to cut ¼" and ½" steel plate?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1 G-GMD-3

Unit 4 Week 7 Days 31-35	Oxy-Fuel cutting of steel plate	**TASKS** WLD 100 TASK 3-Apply principles of oxy-fuel systems to cut, weld, braze, and braze-weld with oxy-fuel WLD 100 TASK 5-Setup components of oxy-fuel equipment and setup procedures WLD 100 TASK 6-Apply oxy-fuel cutting applications and procedures WLD 101 TASK 1-Practice and perform shop procedures safely. WLD 101 TASK 2-Set up oxy-fuel equipment for cutting WLD 101 TASK 3-Cut carbon steel plate and pipe **ACTIVITIES** **1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles.** 2. Students will mark straight lines on 1/8" steel plate and cut with an oxy-fuel torch. 3. Students will mark straight lines on 1" steel plate and cut with an oxy-fuel torch. 4. Students will mark 2" circles on ¼" steel plate and cut with an oxy-fuel torch. 5. Students will mark 2" circles on ½" steel plate and cut with an oxy-fuel torch. **ASSESSMENT** **1.Instructor will grade students on proper set up and shut down of oxy-fuel torch and proper safety techniques.** **2.Instructor will grade students on straightness and quality of cuts on 1/8", ¼",1/2", and 1" steel plate.**	1. How do I properly set up a torch for use? 2. How do I hold a torch to make a straight cut? 3. What size tip do I need to cut ¼" and ½" steel plate?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4.** **RST-7.** GC-1 G-GMD-3
		TASKS **ACTIVITIES** **ASSESSMENT**		

Unit 4 Week 8 Days 36-40	Oxy-Fuel cutting of steel plate	**TASKS** WLD 100 TASK 3-Apply principles of oxy-fuel systems to cut, weld, braze, and braze-weld with oxy-fuel WLD 100 TASK 5-Setup components of oxy-fuel equipment and setup procedures WLD 100 TASK 6-Apply oxy-fuel cutting applications and procedures WLD 101 TASK 1-Practice and perform shop procedures safely. WLD 101 TASK 2-Set up oxy-fuel equipment for cutting WLD 101 TASK 3-Cut carbon steel plate and pipe **ACTIVITIES** **1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles.** 2. Students will pierce cut 1" holes in ¼" steel plate. 3. Students will pierce cut 1" holes in ½" steel plate. 4. Students will cut a freehand 45 degree bevel on ¼" steel plate. 5. Students will cut a freehand 45 degree bevel on 1/2" steel plate. **ASSESSMENT** **1.Instructor will grade students on proper set up and shut down of oxy-fuel torch and proper safety techniques.** **2.Instructor will grade students on straightness and quality of cuts on 1/8", ¼",1/2", and 1" steel plate.**	1. How do I properly set up a torch for use? 2. How do I hold a torch to make a straight cut? 3. What size tip do I need to cut ¼" and ½" steel plate?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4.** **RST-7.** GC-1 G-GMD-3
Unit 4 Week 9 Days 41-45		**TASKS** WLD 100 TASK 3-Apply principles of oxy-fuel systems to cut, weld, braze, and braze-weld with oxy-fuel WLD 100 TASK 5-Setup components of oxy-fuel equipment and setup procedures WLD 100 TASK 6-Apply oxy-fuel cutting applications and procedures WLD 101 TASK 1-Practice and perform shop procedures safely. WLD 101 TASK 2-Set up oxy-fuel equipment for cutting WLD 101 TASK 3-Cut carbon steel plate and pipe **ACTIVITIES**	1. How do I properly lay out my plate? 2. How do I hold a torch to make a straight cut? 3. What size tip do I need to cut ¼" and ½" steel plate?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009

		1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles. 2. Students will be given a drawing and instructions will be given for laying out shapes and designs on drawing onto ¼" steel plate. This assignment will be a 9 week grade for students and will include all oxy-fuel cutting exercises students have learned up to this point. 3. Students will lay out shapes and designs of drawing on ¼" steel plate. 4. Students will cut out shapes and designs on 1/4" steel plate with an oxy-fuel torch. **ASSESSMENT** **1.Instructor will give a 9 week grade to students for this project. Students will be graded on dimensional accuracy of plate, quality of cuts, and proper safety practices.**		Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1 G-GMD-3
Unit 5 Week 10 Days 46-50	Oxy –Fuel cutting of pipe	**TASKS** **WLD 100 TASK 3-**Apply principles of oxy-fuel systems to cut, weld, braze, and braze-weld with oxy-fuel WLD 101 TASK 3-Cut carbon steel plate and pipe **ACTIVITIES** **1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles.** **2. Students will use a Wrap Around to mark 2" and 4" pipe for cutting.** **3. Students will make straight cuts on 2" and 4" pipe with an oxy-fuel torch.** **4. Student will make a free hand 45 degree bevel on 2" and 4" pipe.** **ASSESSMENT** **1.Instructor will give a grade on quality and straightness of cuts and lay out accuracy.**	1. How do I use a Wrap Around? 2. How do I make a straight cut on pipe? 3. How do I make a bevel on pipe?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1 G-GMD-3

Unit 6 Week 11 Days 51-55	Oxy-Fuel Welding	**TASKS** **WLD 100 TASK 3-**Apply principles of oxy-fuel systems to cut, weld, braze, and braze-weld with oxy-fuel WLD 100 TASK 7-Apply oxy-fuel welding applications and procedures WLD 101 TASK 4-Weld carbon steel **ACTIVITIES** **1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles.** **2. Instructor will show You tube Video of actual oxy-fuel welding to students.** **3. Instructor will demonstrate the oxy-fuel welding process to students and discuss proper welding tip size selection and proper filler metal selection.** **4. Students will weld stringer beads on 1/8"steel plate.** **5. Students will weld a t joint on 1/8" steel plate.** **6. Students will weld a lap joint on 1/8"steel plate.** **ASSESSMENT** **1.** Instructor will grade students on the quality of their welds, work ethic, and safety practices.	1. What is oxy-fuel welding? 2. What size tip do I need for oxy-fuel welding? 3. How can I make a good quality oxy-fuel weld?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1 G-GMD-3
		TASKS **ACTIVITIES** **ASSESSMENT**		
Unit 6 Week 12 Days 56-60	Oxy-Fuel Welding	**TASKS** **WLD 100 TASK 3-**Apply principles of oxy-fuel systems to cut, weld, braze, and braze-weld with oxy-fuel WLD 100 TASK 7-Apply oxy-fuel welding applications and procedures WLD 101 TASK 4-Weld carbon steel **ACTIVITIES**	4. What is oxy-fuel welding? 5. What size tip do I need for oxy-fuel welding?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008

		1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles. **2. Instructor will show You tube Video of actual oxy-fuel welding to students.** **3. Instructor will demonstrate the oxy-fuel welding process to students and discuss proper welding tip size selection and proper filler metal selection.** **4. Students will weld stringer beads on 1/8"steel plate.** **5. Students will weld a t joint on 1/8" steel plate.** **6. Students will weld a lap joint on 1/8"steel plate.** **ASSESSMENT** **1.** Instructor will grade students on the quality of their welds, work ethic, and safety practices.	6. How can I make a good quality oxy-fuel weld?	Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1 G-GMD-3
Unit 7 Week 13 Days 61-65	Oxy-Fuel Brazing	**TASKS** **WLD 100 TASK 8-**Apply brazing and braze welding principles and applications **ACTIVITIES** **1.** Instructor will discuss the process and uses of brazing. 2. Students will watch You tube video of actual braze welding being done. 3. Instructor will give students a demonstration of brazing and discuss proper tip size and proper manipulation of braze puddle. 4. Instructor will discuss brazing filler metals and fluxes with students. 5. Students will braze weld stringer beads on 1/8" steel plate. 6. Students will braze weld a t joint on 1/8" steel plate. **ASSESSMENT** **1.** A written test will be given on brazing and brazing filler metals and fluxes. 2. Instructor will grade students on the quality of their braze welds, work ethic, and safety practices.	1. What is brazing used for? 2. What are the different brazing filler metals and fluxes? 3. How do I make a good quality braze weld?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1 G-GMD-3

Unit 7 Week 13 Days 66-70	Oxy-Fuel Brazing	**TASKS** **WLD 100 TASK 8-**Apply brazing and braze welding principles and applications WLD 101 TASK 5-Braze weld cast iron **ACTIVITIES** **1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles.** **2. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles.** **3. Students will braze weld a lap joint on1/8" steel plate.** 4. Students will braze weld a corner edge joint on 1/8" steel plate. 5. Students will braze weld two pieces of cast iron together. **ASSESSMENT** 1. Instructor will grade students on the quality of their braze welds, work ethic, and safety practices.	1. What is brazing used for? 2. What are the different brazing filler metals and fluxes? 3.How do I make a good quality braze weld on cast iron?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4.** **RST-7.** GC-1 G-GMD-3
Unit 8 Week 14-15 Days 71-75	Intro to VCM Victor Cutting Machine	**TASKS** **ACTIVITIES** **1. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles.** **2. Show power point on VCM equipment set up and use and lecture** **3. Show video from VCM equipment and use** **4. Show power point on VCM identification** **5. Discuss proper selection of tips for a particular application.** **6. Show videos from Victor Cutting Tips and Tricks** **ASSESSMENT** **1. Written test given on VCM equipment and set up**	1. What is the proper way to set up an Buggo machine for use? 2. What are the advantages and disadvantages of the Buggo ? 3. What do the letters and numbers on the IPM mean? 4. How do I change the speed?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4.** **RST-7.** GC-1

				G-GMD-3
Unit 8 Week 16 Days 71-75	Intro to VCM	**TASKS** **ACTIVITIES** **1. Students will start and stop cutting.** **2. Students will preheat.** **3. Students will preheat then cut** **ASSESSMENT** **Instructor will give a grade for cut**	What torch angle adjusted? What is the proper cut angle? How can I make my cuts better?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1 G-GMD-3
Unit 9 Week 17 Days 76-79	Intro to VCM cutting	**TASKS** **ACTIVITIES** **7. Students will answer a daily math problem on whiteboard with fractions, decimals, angles, and circles.** **8. Show power point on Buggo equipment set up and use and lecture** **9. Show video from Buggo equipment and use** **10. Show power point on Buggo identification** **11. Discuss proper selection of tips for a particular application.** **12. Show videos from Victor Cutting Tips and Tricks** **ASSESSMENT**	5. What is the proper way to set up an VCM machine for use? 6. What are the advantages and disadvantages of the VCM? 7. What do the letters and numbers on the IPM mean? How do I change the speed?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**.

		2. Written test given on VCM equipment and set up		GC-1 G-GMD-3
Unit 9 Week 18 Days 80-85	Intro to VCM cutting	**TASKS** **ACTIVITIES** **4. Students will start and stop cutting.** **5. Students will preheat.** **6. Students will preheat then cut 90deg. Angle on 3/8 plate** **ASSESSMENT** **Instructor will give a grade for cut**	8. What is the proper way to set up an Buggo machine for use? 9. What are the advantages and disadvantages of the VCM? 10. What do the letters and numbers on the Buggo mean? How do I change the speed?	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2** **RST-4**. **RST-7**. GC-1 G-GMD-3
Unit 9 Week 18 Days 86-90	Intro to VCM cutting	**TASKS** **ACTIVITIES** **1. Students will cut 3/8 plate on 45 deg. angle** **2. Last 2 days of class will be spent cleaning shop for next semester.** **ASSESSMENT** **Instructor will give a grade for cut**	How do I make a quality cut on 3/8 plate How do I make a quality cut on ¾ plate How do I make a quality cut on 1 ½ plate	**Skill Standards:** **AD002** Demonstrate ability to learn new process steps OD008 Identify the safety and proper use of the tools of the trade EA009 Comply with safety guidelines **Core Content:** **RST-2**

				RST-4. **RST-7**. GC-1 G-GMD-3