WLD – 110, Cutting Processes

Orientation and Introduction

Introduction

Concept Content:

In this section you will give an introduction of yourself to your class. This is an opportunity to state your relevant experiences and credentials to teach this subject along with your personal background. This can help connecting with students. You can make a video introduction and upload it to this page as well.

Also, this is where you will give a brief overview of the course and what it's contents will be. There is a section later on in this module where you will give more detail about the course.

Course Syllabus

Concept Goals:

After completing this course, students should be able to:

1. Demonstrate proper safety practices and procedures for welding, including personal protective equipment, fire prevention, and hazard identification and mitigation according to industry standards (OSHA).
2. Effectively use various measuring instruments, including tape measures, squares, protractors, and levels.
3. Perform cutting or trimming of metal objects to specified dimensions using appropriate techniques and equipment.
4. Use mathematics to solve problems related to welding and fabrication, including calculating angles and other measurements.

Concept Content:

This is where you will upload the syllabus. You can do this either by uploading the syllabus text here or you can upload a copy of the syllabus under the resources tab for this section. If you do upload it to the resources, please be sure to give instructions to your students to look for the syllabus there.

Course Resources

Concept Goals:

You can leave this section blank provided you uploaded the student learning outcomes to the previous section.

Concept Content:

This is where you would outline student support resources such as tutoring services, listing your office ours, contact info for support for your college's learning management system, etc. If there are documents you wish to upload, be sure to upload them to the resources tab and give instructions for the students to find the documents there.

Course Overview

Concept Goals:

After completing this course, students should be able to:

1. Demonstrate proper safety practices and procedures for welding, including personal protective equipment, fire prevention, and hazard identification and mitigation according to industry standards (OSHA).
2. Effectively use various measuring instruments, including tape measures, squares, protractors, and levels.
3. Perform cutting or trimming of metal objects to specified dimensions using appropriate techniques and equipment.
4. Use mathematics to solve problems related to welding and fabrication, including calculating angles and other measurements.
5. Understand what potential career options are available for welders and know what professional expectations are.

Concept Content:

This course introduces oxy-fuel and plasma-arc cutting systems. Topics include safety, proper equipment setup, and operation of oxy-fuel and plasma-arc cutting equipment with emphasis on straight line, curve and bevel cutting. Upon completion, students should be able to oxy-fuel and plasma-arc cut metals of varying thickness.

Module	Module Learning Objectives
Module 1 - Safety	• Identify clothing that should be worn when welding or cutting (SLO 1) • Explain the differences between the different types of welding helmets (SLO 1)
Module 2 - Safety Week 2	• Identify appropriate PPE for various work situations (SLO 1) • Be able to read and comprehend information from a National Fire Protection Association information diamond (SLO 1)
Module 3 - Measurement & Shop Math	• Accurately read measurements from a steel rule (SLO 2) • Accurately subject, add, divide, and multiply fractions (SLO 4)
Module 4 - Plasma Arc Cutting	• Identify parts of a plasma arc cutting set up (SLO 3) • Know the safety rules regarding doing plasma cutting (SLO 1) • Safely assemble plasma arc equipment (SLO 1, SLO 3)
Module 5 - Plasma Arc Cutting Week 2	• Pierce carbon steel (SLO 3) • Cut straight lines on carbon steel (SLO 3)
Module 6 - Flame Cutting	• Define what flame cutting is (SLO 3) • List what the basic processes of flame cutting are (SLO 3)
Module 7 Mid-Term Exam	• Demonstrate understanding of material from the first half of the semester.
Module 8 - Oxyfuel Gas Cutting Equipment	• Identify pieces of oxyfuel cutting equipment (SLO 3) • Be able to assemble oxyfuel equipment together (SLO 3)
Module 9 - Oxyfuel Gas Cutting Week 2	• Describe the function of each component of an oxyfuel gas cutting outfit (SLO 3) • Properly assemble an oxyfuel gas cutting outfit (SLO 1, SLO 3) • Know the proper safety precautions for oxyfuel cutting (SLO 1)
Module 10 - Oxyfuel Gas Cutting Week 3	• Perform acceptable cuts on carbon steel (SLO 3) • Properly use a positive pressure cutting torch or a cutting attachment on a positive pressure welding torch (SLO 3)
Module 11 - Related Cutting Processes	• Discuss the various cutting processes (SLO 3) • List advantages and disadvantages of using the different cutting processes (SLO 3)
Module 12 - Related Cutting Processes Week 2	• Discuss the various cutting processes (SLO 3) • List advantages and disadvantages of using the different cutting processes (SLO 3)
Module 13 - Mechanical Cutting Equipment	• Understand how to use mechanical cutting equipment - angle grinders, bandsaws, etc. (SLO 3)
Module 14 - Employability Skills and Career Opportunities in Welding	• Define important employability skills for the welding field. (SLO 5) • Know different career opportunities available to welders (SLO 5)
Module 15 Final Exam	• Demonstrate understanding of material from the entire semester.

Notes/Helpful Tips

Next Steps...

Your Census assignments are REQUIRED in order to remain in the class and they MUST be completed prior to the Census Date **[insert census date here]**. **If you do not have a census date requirement, you can delete this section.**

Effective note taking is also important for not only this course, but for your career as well. Note taking is a great way to retain information. The process of taking notes can keep you alert and focused on the information being presented. It also keeps your mind engaged with what you are hearing, increasing the likelihood you will retain that information. Note taking can also allow you to better organize your thoughts on the information being discussed.

Here is a video that provides some tips for effective note taking

Module 1 - Safety

1.1 Module Overview

Concept Goals:

By the end of this module, you should be able to:

- Identify clothing that should be worn when welding or cutting (SLO 1)
- Explain the differences between the different types of welding helmets (SLO 1)

Concept Content:

Hello Students! Welcome to the start of WLD-110, Cutting Processes. This week we will go over how the class is set up, the expectations for you during the course, and start our two week module on shop safety. See module 1.2 for more details.

This week at a glance:

Textbook:

OSHA Personal Protective Equipment Manual - Pages 9-31

Video:

Welding Safety Video (Oxy Fuel Safety)- 20 minutes

Handout:

Welding Fumes and Gases - 2 Pages

Lecture:

Personal Protective Equipment - 65 Slides - We will cover this over two weeks.

Assignment:

Machine Shop Safety Quiz - 10 Questions

Module 1 Reflection Assignment

1.2 Module Content Resources

Concept Content:

The welding shop is an environment with many hazards and dangers if you are not careful. You can suffer burns, eye damage, and maybe even worse, if you are careless. However, with proper safety precautions, those risks can be mitigated and welding can be done safely. This week we will go over basic safety rules. The video below is a good visual on what proper shop safety looks like. We will also start going over personal protective equipment this week. There is a variety of PPE so we will split this discussion over two weeks.

Textbook:

OSHA Personal Protective Equipment Manual - Pages 9-31

Video:

Welding Safety Video (Oxy Fuel Safety)- 20 minutes

Handout:

Welding Fumes and Gases - 2 Pages

Lecture:

Personal Protective Equipment - 65 Slides - We will cover this over two weeks.

Instructor Note: To help reinforce the presentation, during class, have the students look at all the PPE in the lab and identify what they are and what they are used for.

Other Reading:

Cylinder Change Checklist

Use this checklist to ensure that you use the correct tools and follow the proper precedure for changing a gas cylinder in the shop.

Required Tools

- Adjustable wrench
- Bottle dolly
- Soap and water spray bottle
- Oxyacetylene cutting rig

Note: Use an adjustable wrench (crescent wrench) correctly sized for the fitting. ***Do not use pliers, channel locks, or pipe wrenches. Pliers, channel locks, and pipe wrenches will damage the regulator.***

Required PPE

- Gloves
- Safety Glasses
- Leather footwear
- Cap

Steps for Cylinder Change

1. Perform leak check on regulator, hose fitting, and torch
2. Visually inspect hoses for damage
3. Verify valves on torch are in the "Off" position
4. Verify valves on cylinders are closed
5. Remove regulator from cylinder with an adjustable wrench
6. Install cap on cylinder (except propylene cylinder)
7. Get full cylinder from bottle room
8. Chain full cylinder on bottle dolly
9. Ensure cylinders in bottle room are chained
10. Keep new cylinder chained on the dolly until placed in cylinder holder
11. Remove empty cylinder (with cap on) from cylinder holder and set out of the way
12. Unchain full cylinder from bottle dolly, move and then chain to cylinder holder
13. Move empty cylinder to cylinder room and place in "Empty" section
14. Remove cap from full cylinder and store properly

15. Install regulator and check for leaks
16. Check and set pressures
17. Return tools to proper location

1.3 Module Assessment/Assignment

Concept Content:

This Week's Assignment:

Shop Safety Quiz - 10 Questions - Located under quiz in the assignments tab

1.4 Module Reflection

Concept Content:

This week we will review an article involving the aftermath of a welding accident.

While it is not a common occurance, sometimes fatal accidents can happen in a welding shop. Please read the short article and reflect upon it with the knowelge you have learned this week. What safety rules could have been followed better? What is your takeaway from the story regarding saftey rules?

To upload your reflection, go to the assignmets tab on this module. From there, click on quiz and you will set a place for you to upload your assignment there.

1.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

1.6 Module Wrap-Up

Concept Goals:

Module Learning Objectives:

- List at least seven hazards that exist in the welding shop
- Identify clothing that should be worn when welding or cutting
- Explain the differences between the different types of welding helmets

Concept Content:

This week we began our look into shop safety. Since this is such an important subject with a lot of material to look into, we will conclude our section on shop safety next week.

This week in review:

Textbook:

OSHA Personal Protective Equipment Manual - Pages 9-31

Video:

Welding Safety Video (Oxy Fuel Safety)- 20 minutes

Handout:

Welding Fumes and Gases - 2 Pages

Lecture:

Personal Protective Equipment - 65 Slides - We will cover this over two weeks.

Assignment:

Machine Shop Safety Quiz - 10 Questions

Module 1 Reflection Assignment

Module 2 - Safety Week 2

2.1 Module Overview

Concept Goals:

By the end of this module you should be able to:

- Identify appropriate PPE for various work situations (SLO 1)
- Be able to read and comprehend information from a National Fire Protection Association information diamond (SLO 2)

Concept Content:

This week we will conclude our section on shop safety. See module 2.2 for more detail.

This week at a glance:

Video:

Welding Safety Gear Video - 7.5 minutes

Presentations:

Personal Protective Equipment PowerPoint - 65 Slides - Finish what you did not look through last week

Hazardous Materials Presentation - 16 Slides

Hazard Communication Presentation - 17 Slides

Assignment:

NFPA Diamond Identification Assignment

2.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

The above image will likely look familiar to you. This is an information diamond provided by the NFPA (National Fire Protection Association). These diamonds provide important information as to the type and degree of hazard various materials pose. Are you currently able to read and understand this image and the information it is giving to you? By the end of this module, you will be able to read the above image and know what it is saying.

This week we will wrap up our section on shop safety. We will continue looking into personal protective equipment and look into hazard communication and hazardous material. The welding shop can have both hazardous materials and hazards to work with. It is important to know how to properly navigate both to make sure that your job can be done safely. As you saw with last week's reflection assignment, welding can be dangerous even for seasoned professionals if safety protocol is not strictly followed. This is why we are spending two weeks on safety for your benefit.

Video:

Welding Safety Gear Video - 7.5 minutes

Presentations:

Personal Protective Equipment PowerPoint - 65 Slides - Finish what you did not look through last week

Hazardous Materials Presentation - 16 Slides

Hazard Communication Presentation - 17 Slides

2.3 Module Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This Week's Assignment:

Hazard Diamond Worksheet - Download the worksheet and upload the completed version to the assignments tab. Look for the upload link under quiz.

2.4 Module Reflection

Concept Content:

This is a completely optional section. The purpose of this section is to ask your students to reflect on the material they have learned in this course. Or, if there is a specific area of the content you wanted to make sure students understood, you could guide them to discuss that in their response to your reflection question(s). You could also use this section to discuss case studies related to the content this section went over. However, if you feel that this would not be an appropriate assignment/task for your specific subject, please feel free to delete this section from your class.

2.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

2.6 Module Wrap-Up

Concept Goals:

By the end of this module you should be able to:

- Identify appropriate PPE for various work situations
- Be able to read and comprehend information from a National Fire Protection Association information diamond

Concept Content:

This week we concluded our section on safety. Next week, we will look into measuring and measuring instruments.

This week in review:

Video:

Welding Safety Gear Video - 7.5 minutes

Presentations:

Personal Protective Equipment PowerPoint - 65 Slides - Finish what you did not look through last week

Hazardous Materials Presentation - 16 Slides

Hazard Communication Presentation - 17 Slides

Assignment:

NFPA Diamond Identification Assignment

Module 3 - Measurement and Shop Math

3.1 Module Overview

Concept Goals:

By the end of this module, you should be able to:

- Accurately read measurements from a steel rule (SLO 2)
- Accurately subject, add, divide, and multiply fractions (SLO 4)

Concept Content:

This week we will go into measuring and measurement devices. Please see module 3.2 for more detail.

This week at a glance:

Textbook:

Fractions - 6 Pages

Decimals - 3 Pages

Presentations:

Shop Math - 19 Slides

Steel Rulers - 14 Slides

Assignment:

Module 3 Review Quiz -10 Questions

3.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

Welding Math Video - YouTube Short

As you can see from the above video, math is important to welding. Without it, you will not be able to do you job as effectively nor will you be able to earn as much as you could. Because of this, we are going over basic shop math this week. We will also go into a brief overview of steel rulers because knowing how to read those is a foundational skill in any trade. This will be a good foundation for your to build before we move onto cutting processes.

Textbook:

Fractions - 6 Pages

Decimals - 3 Pages

Textbook sections come from:

Donoghue, T. (2020) *Maths for Trades: Maths for Metal Fabrication Apprentices*

Galway: Galway and Roscommon Education and Training Board

Presentations:

Shop Math - 19 Slides

Steel Rulers - 14 Slides

3.3 Module Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This Week's Assignment:

Module 3 Quiz -10 Questions

3.4 Module Reflection

Concept Content:

This is a completely optional section. The purpose of this section is to ask your students to reflect on the material they have learned in this course. Or, if there is a specific area of the content you wanted to make sure students understood, you could guide them to discuss that in their response to your reflection question(s). You could also use this section to discuss case studies related to the content this section went over. However, if you feel that this would not be an appropriate assignment/task for your specific subject, please feel free to delete this section from your class.

3.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's

content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

3.6 Module Wrap-Up

Concept Goals:

By the end of this module, you should be able to:

- Accurately read measurements from a steel rule
- Accurately subject, add, divide, and multiply fractions

Concept Content:

This week we went into measuring and measurement devices. Next week we will begin our section on plasma arc cutting.

This week in review:

Textbook:

Fractions - 6 Pages

Decimals - 3 Pages

Presentations:

Shop Math - 19 Slides

Steel Rulers - 14 Slides

Assignment:

Module 3 Review Quiz -10 Questions

Module 4 - Plasma Arc Cutting

4.1 Module Overview

Concept Goals:

By the end of this module, you should be able to:

- Identify parts of a plasma arc cutting set up (SLO 3)
- Know the safety rules regarding doing plasma cutting (SLO 1)
- Safely assemble plasma arc equipment (SLO 1, SLO 3)

Concept Content:

This week we will begin our two week section on plasma arc cutting. See module 4.2 for more detail.

Textbook:

Plasma Arc Cutting - 23 Pages

Video:

Introduction to Plasma Cutting - 21 Minutes

Presentations:

Plasma Arc Cutting - 36 Slides

Assignment:

Plasma Arc Assembly Assignment

4.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

Please view this video before continuing onwards.

Plasma cutting is an interesting process. As you can see in the video above, there are a lot of interesting things you can do with it. Plasma arc cutting is a basic foundational skill you will need going forward with welding. This is why it is one of the first things we will teach you. This week we will cover a lot of material concerning plasma arc cutting. We will take a second week to discuss this as there is much to cover regarding plasma cutting.

Textbook:

Plasma Arc Cutting - 23 Pages

Video:

Introduction to Plasma Cutting - 21 Minutes

Presentations:

Plasma Arc Cutting - 36 Slides

4.3 Moudle Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week's assignment:

Plasma Arc Cutting Assignment

Download the worksheet and fill it out as you work on the assignment in class. Be sure to turn in the worksheet to me once you are done.

4.4 Module Reflection

Concept Content:

This is a completely optional section. The purpose of this section is to ask your students to reflect on the material they have learned in this course. Or, if there is a specific area of the content you wanted to make sure students understood, you could guide them to discuss that in their response to your reflection question(s). You could also use this section to discuss case studies related to the content this section went over. However, if you feel that this would not be an appropriate assignment/task for your specific subject, please feel free to delete this section from your class.

4.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

4.6 Module Wrap-Up

Concept Goals:

Module learning objectives:

- Identify parts of a plasma arc cutting set up
- Know the safety rules regarding doing plasma cutting
- Safely assemble plasma arc equipment

Concept Content:

This week was the beginning of our two week section on plasma arc cutting. Next week we will continue reviewing the material and giving you more hands on experience with the equipment.

Textbook:

Plasma Arc Cutting - 23 Pages

Video:

Introduction to Plasma Cutting - 21 Minutes

Presentations:

Plasma Arc Cutting - 36 Slides

Assignment:

Plasma Arc Assembly Assignment

Module 5 - Plasma Arc Cutting Week 2

5.1 Module Overview

Concept Goals:

By the end of this module, you should be able to:

- Pierce carbon steel (SLO 3)
- Cut straight lines on carbon steel (SLO 3)

Concept Content:

This week we will finish our second week on plasma cutting. See module 5.2 for more details.

This week at a glance:

Lecture:

Plasma Arc Cutting - 23 Slides

Videos:

Plasma Cutting Basics: How To Get Clean Cuts - 9 Minutes

Plasma Cutting Basics - 6.5 Minutes

Assignment:

Plasma Arc Cutting Carbon Steel Assignment - See module 5.3 for details

Plasma Arc Piercing and Cutting Carbon Steel Assignment - See module 5.3 for details

Reflection:

View soft skills videos **(instructor note: this is an optional assignment for students)**

5.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

Please view the video above before going on in this module:

This is another example of the cool things you can do with a plasma cutter. This week we will continue our section on plasma arc cutting. We will continue looking into plasma arc set up equipment and walking you through the basics. See module 5.3 for your hands on activities for the week.

Lecture:

Plasma Arc Cutting - 23 Slides

Videos:

Plasma Cutting Basics: How To Get Clean Cuts - 9 Minutes

Plasma Cutting Basics - 6.5 Minutes

5.3 Module Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

Assignments:

Plasma Arc Cutting Assignment 1

Plasma Arc Cutting Assignment 2

Download both worksheets and fill them out as you work on the assignments in class. Be sure to turn in the worksheets to be after you finish the assignments.

5.4 Module Reflection

Concept Content:

This week I wanted to take a second to iterate the importance of developing one's soft skills. While there is a module related to such later on in the course, it would be a good time to start discussing it as we are almost halfway through the course.

Soft skills, skills such as teamwork, punctuality, communicatoin skills, are vital to your success in industry. Yes, even in manufacturing. You will need to know how to work on a team and communicate appropriately in order to function well. Below are two videos from **Jeremiah Cornett**, Plant Manager, RegO regarding a couple of these soft skills and their importance to employees in industry.

Teamwork and Problem Solving Video

Dependability and Reliability Video

As you can see from the short video clips, these soft skills are very important. They can even be tied to your earning potential in the industry. So, be sure that when we get to the employability skills module at the end of the course, to pay good attention.

If you are interested in hearing from other industry figures regarding the importance of soft skills, click on this link. It will take you to the Nessicary Skills Now website where the first two video clips came from.

5.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

5.6 Module Wrap-Up

Concept Goals:

Module Learning Objectives:

- Pierce carbon steel

- Cut straight lines on carbon steel

Concept Content:

This week we finished our two week section on plasma cutting. Next week, we will look into flame cutting.

This week in review:

Lecture:

Plasma Arc Cutting - 23 Slides

Videos:

Plasma Cutting Basics: How To Get Clean Cuts - 9 Minutes

Plasma Cutting Basics - 6.5 Minutes

Assignment:

Plasma Arc Cutting Carbon Steel Assignment - See module 5.3 for details

Plasma Arc Piercing and Cutting Carbon Steel Assignment - See module 5.3 for details

Reflection:

View soft skills videos **(instructor note: this is an optional section for students)**

Module 6 - Flame Cutting

6.1 Module Overview

Concept Goals:

By the end of this module, you should be able to:

- Define what flame cutting is (SLO 3)
- List what the basic processes of flame cutting are (SLO 3)

Concept Content:

This week we will start our four week section on Flame Cutting/Oxyfuel Gas Cutting. See module 6.2 for more detail.

This week at a glance:

Textbook:

Flame Cutting Textbook Chapter - 26 Pages

Flame Cutting Textbook Chapter Pt 2 - 14 Pages

Video:

Flame Cutting Video - 11.5 Minutes

Assignment:

Module 6 Review Quiz - 10 Questions

6.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week we will introduce the concept of Flame Cutting. This is also known as Oxyfuel cutting. We will have an overview of the concepts this week and will spend weeks 8-10 going more in-depth about the processes and equipment used.

Textbook:

Flame Cutting Textbook Chapter - 26 Pages

Flame Cutting Textbook Chapter Pt 2 - 14 Pages

Video:

Flame Cutting Video - 11.5 Minutes

6.3 Module Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week's assignment:

Module 6 Review Quiz - 10 Questions

6.4 Module Reflection

Concept Content:

This is a completely optional section. The purpose of this section is to ask your students to reflect on the material they have learned in this course. Or, if there is a specific area of the content you wanted to make sure students understood, you could guide them to discuss that in their response to your reflection question(s). You could also use this section to discuss case studies related to the content this section went over. However, if you feel that this would not be an appropriate assignment/task for your specific subject, please feel free to delete this section from your class.

6.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

6.6 Module Wrap-Up

Concept Goals:

Module learning objectives:

- Define what flame cutting is
- List what the basic processes of flame cutting are

Concept Content:

This week we started our four week section on flame cutting/oxyfuel cutting. Next week, we will take a break from that to have our mid-term exam. The mid-term will cover material from all of the modules thus far in the course.

This week in review:

Textbook:

Flame Cutting Textbook Chapter - 26 Pages

Flame Cutting Textbook Chapter Pt 2 - 14 Pages

Video:

Flame Cutting Video - 11.5 Minutes

Assignment:

Module 6 Review Quiz - 10 Questions

Module 7 - Mid-Term Exam

7.1 Mid-Term Exam

Concept Goals:

By the end of this module, you should:

- Demonstrate understanding of material from the first half of the semester.

Concept Content:

This week we will take our mid-term exam. This exam is based on the material you studied during the first six weeks of the semester. To access the exam, go to the assignments tab and click on test.

7.2 Module Wrap-Up

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

Thank you for completing your mid-term exam. Next week we will continue on with this course.

Module 8 - Oxyfuel Gas Cutting Equipment

8.1 Module Overview

Concept Goals:

By the end of this module, you should be able to:

- Identify pieces of oxyfuel cutting equipment (SLO 3)
- Be able to assemble oxyfuel equipment together (SLO 3)

Concept Content:

This week we will continue our section on oxyfuel cutting. See module 8.2 for more detail.

This week at a glance:

Textbook:

Oxyfuel Welding and Cutting Equipment Pt 1 - 26 Pages

Oxyfuel Welding and Cutting Equipment Pt 2 - 12 Pages

Video:

Safe Oxyfuel Setup and Operation - 14 Minutes

In Class Assignments

Textbook Exercises 31-1, 31-2, 31-3

Assignment:

Module Review Quiz - 10 Questions

8.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week we will resume our section on oxyfuel cutting. We will cover the basic equipment you will use for the oxyfuel cutting. We will also briefly discuss safety with set up and operation of the cutting equipment.

Textbook:

Oxyfuel Welding and Cutting Equipment Pt 1 - 26 Pages

Oxyfuel Welding and Cutting Equipment Pt 2 - 12 Pages

Video:

Safe Oxyfuel Setup and Operation - 14 Minutes

8.3 Module Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week's assignment

Module 8 Quiz - 10 Questions

In Class Assignments

Textbook Exercises 31-1, 31-2, 31-3 - Located in Chapter 31 pt 2 linked in module 8.2

8.4 Module Reflection

Concept Content:

This is a completely optional section. The purpose of this section is to ask your students to reflect on the material they have learned in this course. Or, if there is a specific area of the content you wanted to make sure students understood, you could guide them to discuss that in their response to your reflection question(s). You could also use this section to discuss case studies related to the content this section went over. However, if you feel that this would not be an appropriate assignment/task for your specific subject, please feel free to delete this section from your class.

8.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

8.6 Module Wrap-Up

Concept Goals:

By the end of this module, you should be able to:

- Identify pieces of oxyfuel cutting equipment
- Be able to assemble oxyfuel equipment together

Concept Content:

This week we continued our section on oxyfuel cutting. Next week we will begin discussing the finner details of the process of oxyfuel cutting.

This week at a glance:

Textbook:

Oxyfuel Welding and Cutting Equipment Pt 1 - 26 Pages

Oxyfuel Welding and Cutting Equipment Pt 2 - 12 Pages

Video:

Safe Oxyfuel Setup and Operation - 14 Minutes

In Class Assignments

Textbook Exercises 31-1, 31-2, 31-3

Assignment:

Module Review Quiz - 10 Questions

Module 9 - Oxyfuel Gas Cutting Week 2

9.1 Module Overview

Concept Goals:

By the end of this module, you should be able to:

- Describe the function of each component of an oxyfuel gas cutting outfit (SLO 3)
- Properly assemble an oxyfuel gas cutting outfit (SLO 1, SLO 3)
- Know the proper safety precautions for oxyfuel cutting (SLO 3)

Concept Content:

This week we will continue our overview of Oxyfuel cutting. See module 9.2 for more detail.

This week at a glance:

Lectures:

Oxyfuel Presentation - 23 Slides

Handout:

Setup and Shutdown Procedure for Oxyfuel Cutting Torches - 7 Pages

Assignments:

Oxyfuel Gas Cutting and Welding Safety Test - 5 Questions

9.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week we will continue our discussions on Oxyfuel Gas Cutting. We will be getting more into the weeds this week. We will also expand upon safety practices in Oxyfuel gas cutting.

Lectures:

Oxyfuel Presentation - 23 Slides

Handout:

Setup and Shutdown Proceture for Oxyfuel Cutting Torches - 7 Pages

Videos:

The Full Guide to Oxy Fuel Cutting Video - 45 Minutes

While I do realize this is a long video, it is a visual representation of most of the concepts discussed in the Oxyfuel Presentation. It's a good overview of Oxy Fuel Cutting that I think will help you visualize the concepts from the lecture.

9.3 Module Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week's assignment:

Oxyfuel Safety Quiz - 5 Questions

9.4 Module Reflection

Concept Content:

This is a completely optional section. The purpose of this section is to ask your students to reflect on the material they have learned in this course. Or, if there is a specific area of the content you wanted to make sure students understood, you could guide them to discuss that in their response to your reflection question(s). You could also use this section to discuss case studies related to the content this section went over. However, if you feel that this would not be an appropriate assignment/task for your specific subject, please feel free to delete this section from your class.

9.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

9.6 Module Wrap-Up

Concept Goals:

Module learning objectives:

- Describe the function of each component of an oxyfuel gas cutting outfit
- Properly assemble an oxyfuel gas cutting outfit
- Know the proper safety precautions for oxyfuel cutting

Concept Content:

This week we continued our overview of Oxyfuel Cutting. Next week we will conclude our setion on Oxyfuel cutting with more hands on activities.

This week in review:

Lectures:

Oxyfuel Presentation - 23 Slides

Handout:

Setup and Shutdown Proceture for Oxyfuel Cutting Torches - 7 Pages

Assignments:

Oxyfuel Gas Cutting and Welding Safety Test - 5 Questions

Module 10 - Oxyfuel Gas Cutting Week 3

10.1 Module Overview

Concept Goals:

By the end of this module, you should be able to:

- Perform acceptable cuts on carbon steel (SLO 3)
- Properly use a positive pressure cutting torch or a cutting attachment on a positive pressure welding torch (SLO 3)

Concept Content:

This week we will conclude our section on Oxyfuel cutting. See module 10.2 for more detail.

This week at a glance:

Videos:

Oxy-Fuel Cutting: Best Practices and Tips - 8 Minutes

In-Class Assignments:

Module 10 Assignment 1

Module 10 Assignment 2

Module 10 Assignment 3

Reflection Assignment:

Reflection Assignment #2

10.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week we will finish our section on Oxyfuel cutting. We will be focused on hands-on activities to get you acquanited with using the oxyfuel torch to make cuts. These are some basic activities that will help you get a feel for how this process works and to build up to more complicated cuts later on in the program.

Videos:

Oxy-Fuel Cutting: Best Practices and Tips - 8 Minutes

In-Class Assignments:

Module 10 Assignment 1

Module 10 Assignment 2

Module 10 Assignment 3

10.3 Module Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This is where you will outline what this week's assessment/assignment is. If it is a quiz, you will have to create that using whatever method your school's LMS system allows. If it is another type of assignment, upload it to where ever your school's LMS system allows for that and tell students that is where they can find the week's assignment.

10.4 Module Reflection

Concept Content:

This is a completely optional section.

This week, we will do our second reflection assignment regarding employability/soft skills. Please review the following videos before reading the rest of this assignment.

Integrity and Initiative Video

Interpersonal Skills Video

After viewing the above videos, write a paragraph reflecting on your own use of these skills in your life thus far. If these are areas you could see improvement in, please write about how you mean to strengthen these areas. Upload your completed reflection to the assignments tab under quizzes.

The three skills highlighted this week are important for you to hone if you want to do well in your professional career.

10.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

10.6 Module Wrap-Up

Concept Goals:

Module learning objectives:

- Perform acceptable cuts on carbon steel
- Properly use a positive pressure cutting torch or a cutting attachment on a positive pressure welding torch

Concept Content:

This week we concluded our section on Oxyfuel cutting.

This week in review:

Videos:

Oxy-Fuel Cutting: Best Practices and Tips - 8 Minutes

In-Class Assignments:

Module 10 Assignment 1

Module 10 Assignment 2

Module 10 Assignment 3

Reflection Assignment:

Reflection Assignment #2

Module 11 - Related Cutting Process

11.1 Module Overview

Concept Goals:

By the end of this module, you should be able to:

- discuss the various cutting processes (SLO 3)
- list advantages and disadvantages of using the different cutting processes (SLO 3)

Concept Content:

This week we will begin our two week section on related cutting processes. Please see module 11.2 for more detail.

This week at a glance:

Videos:

What is Laser Beam Welding and How Does It Work - 5.5 Minutes

Air Carbon Arc Cutting Overview - 6.5 Minutes

Oxygen Lance (Thermal Lance) Cutting - 2 Minutes

Textbook

Related Cutting Processes - 20 Pages

Assignment:

Module Review Quiz - 5 Questions

11.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week we will cover a few other cutting processes. These cutting processes might not be quite as common as gas and plasma cutting, but they are cutting processes you might use. It will depend on the processes your employer will have set up for their business. This week is an overview of the processes and we will explore these processes more indepth next week.

Videos:

What is Laser Beam Welding and How Does It Work - 5.5 Minutes

Air Carbon Arc Cutting Overview - 6.5 Minutes

Oxygen Lance (Thermal Lance) Cutting - 2 Minutes

Textbook

Related Cutting Processes - 20 Pages

11.3 Module Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week's assignment:

Module Review Quiz - 5 Questions

11.4 Module Reflection

Concept Content:

This is a completely optional section. The purpose of this section is to ask your students to reflect on the material they have learned in this course. Or, if there is a specific area of the content you wanted to make sure students understood, you could guide them to discuss that in their response to your reflection question(s). You could also use this section to discuss case studies related to the content this section went over. However, if you feel that this would not be an appropriate assignment/task for your specific subject, please feel free to delete this section from your class.This is a completely optional section. The purpose of this section is to ask your students to reflect on the material they have learned in this course. Or, if there is a specific area of the content you wanted to make sure students understood, you could guide them to discuss that in their response to your reflection question(s). You could also use this section to discuss case studies related to the content this section went over. However, if you feel that this would not be an appropriate assignment/task for your specific subject, please feel free to delete this section from your class.

11.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

11.6 Module Wrap-Up

Concept Goals:

Module learning objectives:

- discuss the various cutting processes
- list advantages and disadvantages of using the different cutting processes

Concept Content:

This week we began our two week section on related cutting processes. We will explore these processes more in-depth next week.

This week in review:

Videos:

What is Laser Beam Welding and How Does It Work - 5.5 Minutes

Air Carbon Arc Cutting Overview - 6.5 Minutes

Oxygen Lance (Thermal Lance) Cutting - 2 Minutes

Textbook

Related Cutting Processes - 20 Pages

Assignment:

Module Review Quiz - 5 Questions

Module 12 - Related Cutting Process Week 2

12.1 Module Overview

Concept Goals:

By the end of this module, you should be able to:

- discuss the various cutting processes (SLO 3)
- list advantages and disadvantages of using the different cutting processes (SLO 3)

Concept Content:

This week we will continue going into related cutting processes. See module 12.2 for more detail.

This week at a glance:

Lectures:

Carbon Arc Cutting Setup and Inspection - 18 Slides

Videos:

Arc Gouging in Detail - 23 Minutes

Laser Cutting Thick Material - 10.5 Minutes

Waterjet Cutting Overview - 36 Minutes

Assignment:

Module Review Quiz - 5 Questions

12.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week we will finish looking over these other cutting processes. We will go into depth regarding the processes we discussed last week and will then go over Waterjet Cutting. Next week we will discuss careers in welding.

Lectures:

Carbon Arc Cutting Setup and Inspection - 18 Slides

Videos:

Arc Gouging in Detail - 23 Minutes

Laser Cutting Thick Material - 10.5 Minutes - This video is good for examining some of the drawbacks of laser cutting and ways to mitigate them.

Waterjet Cutting Overview - 36 Minutes

12.3 Module Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

Assignment:

Module Review Quiz - 5 Questions

12.4 Module Reflection

Concept Content:

This is a completely optional section. The purpose of this section is to ask your students to reflect on the material they have learned in this course. Or, if there is a specific area of the content you wanted to make sure students understood, you could guide them to discuss that in their response to your reflection question(s). You could also use this section to discuss case studies related to the content this section went over. However, if you feel that this would not be an appropriate assignment/task for your specific subject, please feel free to delete this section from your class.

12.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

12.6 Module Wrap-Up

Concept Goals:

Module learning objectives:

- discuss the various cutting processes
- list advantages and disadvantages of using the different cutting processes

Concept Content:

This week we finished our review of related cutting processes. Next week we will explore careers in welding.

This week in review:

Lectures:

Carbon Arc Cutting Setup and Inspection - 18 Slides

Videos:

Arc Gouging in Detail - 23 Minutes

Laser Cutting Thick Material - 10.5 Minutes

Waterjet Cutting Overview - 36 Minutes

Assignment:

Module Review Quiz - 5 Questions

Module 13 - Mechanical Cutting Equipment

13.1 Module Overview

Concept Goals:

By the end of this module, you should be able to:

- Understand how to use mechanical cutting equipment - angle grinders, bandsaws, etc. (SLO 3)

Concept Content:

This week we will discuss mechanical cutting equipment. In this course thus far, we've talked about ways to cut using welding torches. This week, we will go over tools used to cut metal mechanically. This includes angle grinders and cutting saws. We will go over safety tips as well as showcasing how to use various saws.

Videos:

Grinder Safety: How to Properly Use an Angle Grinder - 45 Minutes

The Ultimate Guide to Metal Cutting Saws - 28 Minutes

Graphics:

Embedded in module 13.2

Assignment:

Module 13 Quiz - 5 Questions

13.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

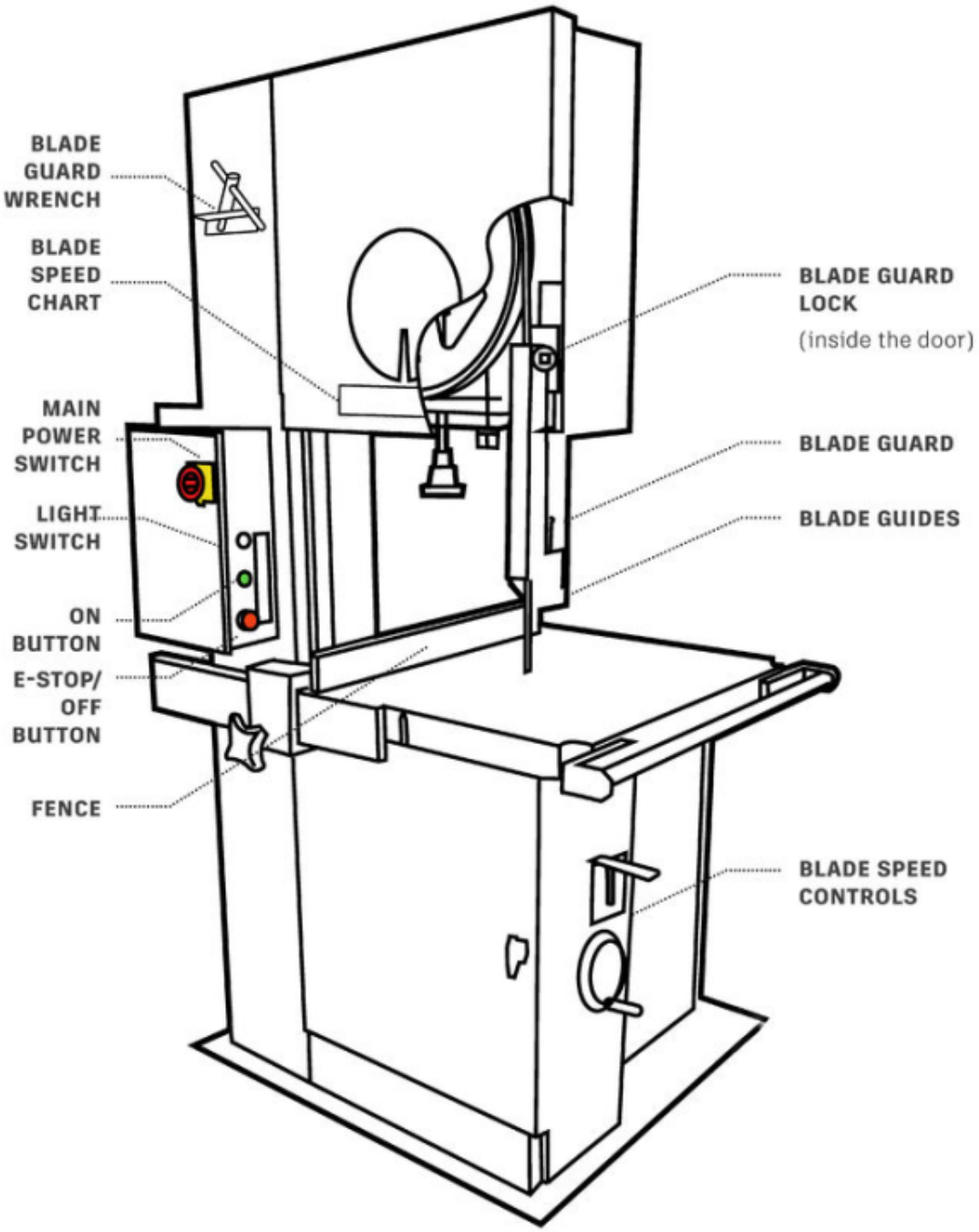
This week we will discuss mechanical cutting equipment. In this course thus far, we've talked about ways to cut using welding torches. This week, we will go over tools used to cut metal mechanically. This includes angle grinders and cutting saws. We will go over safety tips as well as showcasing how to use various saws.

Videos:

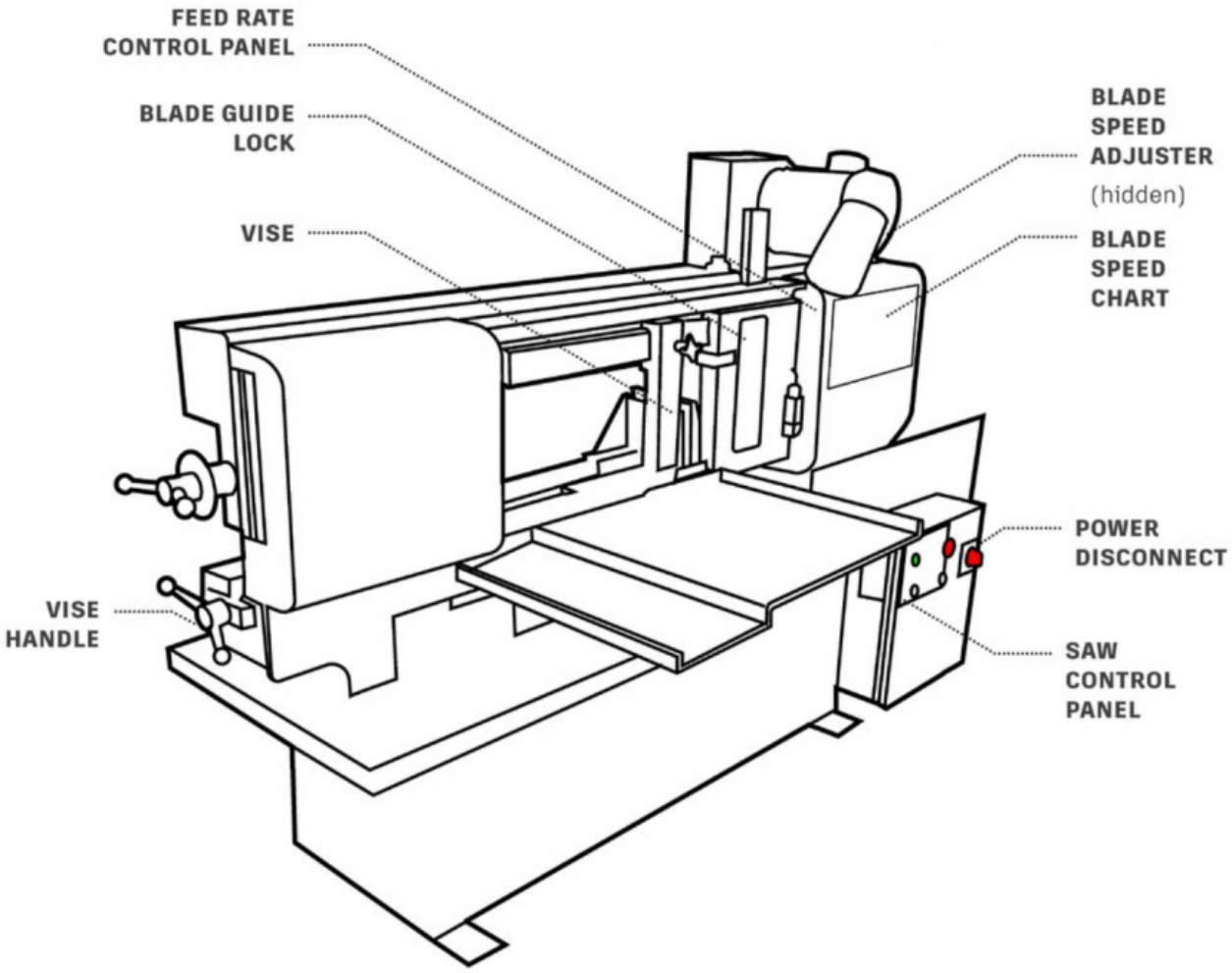
Grinder Safety: How to Properly Use an Angle Grinder - 45 Minutes

The Ultimate Guide to Metal Cutting Saws - 28 Minutes

Examples of bandsaws:



Example of a vertical bandsaw



Example of a horizontal bandsaw

13.3 Module Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week's assignment:

Module 13 Quiz - 5 Questions

13.4 Module Reflection

Concept Content:

This is a completely optional section. The purpose of this section is to ask your students to reflect on the material they have learned in this course. Or, if there is a specific area of the content you wanted to make sure students understood, you could guide them to discuss that in their response to your

reflection question(s). You could also use this section to discuss case studies related to the content this section went over. However, if you feel that this would not be an appropriate assignment/task for your specific subject, please feel free to delete this section from your class.

13.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

13.6 Module Wrap-Up

Concept Goals:

Module learning objectives:

- Understand how to use mechanical cutting equipment - angle grinders, bandsaws, etc. (SLO 3)

Concept Content:

This week we discused mechanical cutting equipment. Next week, we will wrap up the semester by talking about professionalism and career opportunities in welding.

This week in review:

Videos:

Grinder Safety: How to Properly Use an Angle Grinder - 45 Minutes

The Ultimate Guide to Metal Cutting Saws - 28 Minutes

Graphics:

Embedded in module 13.2

Assignment:

Module 13 Quiz - 5 Questions

Module 14 - Employability Skills & Career Opportunities in Welding

14.1 Module Overview

Concept Goals:

By the end of this week, you should be able to:

- Define important employability skills for the welding field (SLO 5).
- Know different career opportunities available to welders (SLO 5)

Concept Content:

This week we will look at employability skills. See module 14.2 for more detail.

This week at a glance:

Lectures:

Employability Skills - 9 Slides

Website Reading:

Bearu of Labor Statistics for Welders

OnetOnline Job Summary for Welders

American Welding Society Career Path Summaries

Videos:

The importance of employability skills - 1 Minute

The importance of problem solving skills - 0.5 Minute

Handouts:

Work Ethic Scenarios

Conflict Resolution Scenarios

Assignment:

Welding Career Reflection

14.2 Module Content Resources

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week we will discuss employability skills in the workplace. Our two reflection assignments have already touched on this subject, but we are going to dive deeper this week **[Instructor note: If you chose not to do the two reflection assignments, you can delete the second sentence].** As you will see from the videos, soft-skills or employability skills are as important for your success in the field as are your technical skills. We will discuss the scenarios from the handouts in class this week.

Lectures:

Employability Skills - 9 Slides

Website Reading:

Bearu of Labor Statistics for Welders

OnetOnline Job Summary for Welders

OnetOnline is a great resource to look for careers related to welding. If you go to the top right where it gives you the option to search occupation, type in welding and you will find many different careers related to welding you can explore. These pages will include job summaries, required skills, etc.

American Welding Society Career Path Summaries

Videos:

The importance of employability skills - 1 Minute

The importance of problem solving skills - 0.5 Minute

Handouts:

Work Ethic Scenarios

Conflict Resolution Scenarios

14.3 Module Assessment/Assignment

Concept Goals:

Outline the learning goals for this module here.

Concept Content:

This week's assignment:

Welding Career Reflection - Research welding careers in Onet and pick one of the career tracks to write one paragraph about summarizing what interests you about that career. Write another paragraph about what you believe you will need to do to prepare for that career.

14.4 Module Reflection

Concept Content:

This is a completely optional section. The purpose of this section is to ask your students to reflect on the material they have learned in this course. Or, if there is a specific area of the content you wanted to make sure students understood, you could guide them to discuss that in their response to your reflection question(s). You could also use this section to discuss case studies related to the content this section went over. However, if you feel that this would not be an appropriate assignment/task for your specific subject, please feel free to delete this section from your class.

14.5 Module Discussion Board

Concept Content:

This is a completely optional section. The prupose of this section is to invite your students to discuss the week's content and what they learned from it with each other. If you feel this would not be approriate for your class or at least this week's content, feel free to delete it. If you are interested in doing a discussion board, a good idea would be to come up with a question related to the week's content for the students to answer. From there, require them to answer the quesion and respond to a least one other student's answer to foster discussion.

14.6 Module Wrap-Up

Concept Goals:

Module learning objective:

- Define important employability skills for the welding field (SLO 5)
- Know different career opportunities available to welders (SLO 5)

Concept Content:

This week we reviewed employability skills. Next week, we will have our final exam that covers all of the material we discussed in the course.

This week in review:

Lectures:

Employability Skills - 9 Slides

Website Reading:

Bearu of Labor Statistics for Welders

OnetOnline Job Summary for Welders

American Welding Society Career Path Summaries

Videos:

The importance of employability skills - 1 Minute

The importance of problem solving skills - 0.5 Minute

Handouts:

Work Ethic Scenarios

Conflict Resolution Scenarios

Assignment:

Welding Career Reflection

Module 15 - Final Exam

15.1 Final Exam

Concept Goals:

By the end of this module, you should:

- Demonstrate understanding of material from the entire semester.

Concept Content:

This week we will take our final exam. To access the exam, go to the assignments tab and click on test.

15.2 Course Wrap-Up

Concept Content:

You have now finished your final exam! With this, you have completed the course. Thank you for sticking with the course through to the end.

Faculty Resources (For Instructor Only, Do Not Publish Live)

Odigia Guide

Concept Content:

Click on the resources tab to find the guide sheet for instructors.