

# Contextualized Basic Skills Development and Integration Guide

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**Volume I** Reading Comprehension and Writing  
Manufacturing and Maintenance

A Project IMPACT Publication





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# **Introduction to Manufacturing Technology**

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Kate Loden, Dean Giese, and Richard Torraco



# Blueprint Reading 130

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It would be helpful for you to open a blank Word file side-by-side with the image of Figure 1 on your computer screen.

## Your Assignment

Write **two detailed paragraphs** that describe what you see when you look at Figure 1.

**Paragraph 1** will describe an overview of the blueprint. Explain the major sections of the blueprint and their relative positions on the page.

**Paragraph 2** will focus in on the drawings of the part. Describe the different lines, both how they look and what they mean.

Use complete sentences and ALL of the following terms. You will think carefully about which terms belong in each paragraph. Imagine that another student might have to sketch out a ROUGH blueprint based on your description.

Title block	Object Line
Tolerance	Section Line
Scale	Change Block
Section view	Center Line
Extension Line	Hidden line
Dimension Line	Note

## Writing tips

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You will be using words to describe how the different parts of the drawings look and where they are placed on the page. Remember to choose carefully between *left* and *right*, *up* and *down*, *above* or *below*, *next to* or *beside*, and many other words that indicate position.

As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details.

Also make sure that **each sentence is complete and clear** on its own; read your work out loud when you are done to help check whether it is clear enough.

After you finish Class 130, return to Lesson 3 (of 18) and look at Figure 1.

# Intro to Supply Chain Management 140

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This class has explained the relationship between the supply chain and customer service. You have probably had some negative experiences as a customer that were caused by problems with a supply chain.

Write a short report of several paragraphs that explains how products and information are both part of a supply chain. Then describe several ways a supply chain can fail, and the impact that can have on customer satisfaction. As much as possible, use your own experience as a customer to help provide examples.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

**Clear, logical organization** helps your reader understand the information. As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

**Repeat** important terms throughout the report to make connections clear. Be sure to explain any technical terms or abbreviations the first time you use them.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader. Your use of capital letters and punctuation help the reader understand your information.

# Intro to Materials 100

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The “Intro to Materials 100” class discusses four basic types of materials used in manufacturing (i.e., metals, plastics, ceramics, and composites).

Write four paragraphs, one for each type of material. Explain the basic properties of each material. Make clear the advantages or disadvantages of those properties.

## Writing tips

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Begin each paragraph with a sentence that states the topic the paragraph will cover. This topic sentence will help your reader understand exactly what is coming in the rest of the paragraph.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader.

**Read** your paragraphs **out loud** when you are done to help you check for errors or confusing structures.

# Overview of Plastic Materials 115

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Please write a short report on the topic of plastics. Your audience for this report is other students who are studying plastics. Underline any class vocabulary words as you use them.

Paragraph 1: Explain what *thermoplastics* are and their advantages and disadvantages. Give two examples of specific types of thermoplastics, and products that are manufactured from each of them.

Paragraph 2: Explain what *thermosets* are and their advantages and disadvantages. Give two examples of specific types of thermosets, and products that are manufactured from each of them.

Paragraph 3: Now choose an object that you use every day that is made of plastic. Your toothbrush is a good candidate. Try to decide whether your object is made of a thermoplastic or a thermoset, or a combination of both. After making your best guess, describe the object in a paragraph and explain your reasons for your decision.

## Writing tips

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When you write a report, you must consider the **audience** who will read your report. What details will they need explained in order to understand the information?

**Clear, logical organization** helps your audience as well. **Repeat** important terms throughout the report to make connections clear.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader.

# Lean Manufacturing Overview 130

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Take some time to think of a very disorganized place you have experienced in your life. It could be a workplace, your grandfather's garage, a friend's workshop, or teenager's bedroom.

You will write a short report that describes how the **Five S Approach** could be applied to improve that situation. The audience for this report would be other students learning about the Five S Approach.

**Paragraph 1: Introduce** the reader to the situation by describing the situation/location and the people involved.

**Paragraphs 2–6:** In each short paragraph explain one “S” and describe how it could be implemented in your situation. Discuss possible difficulties and solutions for that implementation, as well. Who will have to be involved? How will that be accomplished? You will have FIVE short paragraphs, each one explaining how to use one “S.”

**Paragraph 7:** Conclude with your own thoughts/opinions about the usefulness of the Five S Approach at work or at home.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

When you write a report, you must consider the **audience** who will read your report. What details will they need explained in order to understand the information?

**Clear, logical organization** helps your audience as well. Use **transition words** like *next, then, when, after, before, also*. **Repeat** important terms throughout the report to make connections clear.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader.

When you have completed the class, return to Lesson 16 (of 18), the Five S Approach.

# Cell Design and Pull Systems

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After you complete the class, return to the page with the class vocabulary list on it.

You have a job in a shop where you seem to spend half your time walking from task to task. After finishing this class, you will have some ideas for how the shop could be organized, and you're thinking of talking with the boss. Before you do, you need to be sure your thoughts on this topic are clear.

Write a paragraph that explains how to run a shop based on a cell design. Use as many vocabulary words as you can, and underline them as you use them.

Then write a second paragraph that contrasts a cell design with a disorganized set-up. Point out as many advantages as you can. Your explanation should make sense to someone who has never heard of this kind of shop design.

## Writing tips

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As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, then perhaps your thinking is not clear.



## Approaches to Maintenance 120

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Your brother has asked for your help in choosing a car to drive for work. He has very little money and no interest in cars. You help him purchase a car that is fifteen years old. It is his only transportation, and his job depends on keeping it running. You don't want him to be coming to you for money, so you also want to keep his car running.

**Take each of the maintenance approaches you learned about in this class and write a paragraph for each one.**

Explain how you would use that approach to maintain this older car. Describe the tasks involved, and what the costs and benefits of each method might be.

Remember that your brother will be the primary operator for this car, similar to the primary operator on a shop floor. You are taking the role of maintenance professional—you could be a technician or the manager. You will definitely want to use the term “autonomous maintenance” in one of your paragraphs.

**After you have written five paragraphs, in a sixth paragraph explain which method you would probably actually use in this situation.**

### Writing tips

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As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details.

Also make sure that **each sentence is complete and clear** on its own.

# Quality Overview 100

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You have probably purchased many products over the years that were of poor quality. Think back to one that was particularly disappointing. Did it cost you a lot of money? Did it fail to live up to its advertised promises?

You are going to **write a letter of complaint** to the manufacturer of that product. This is a formal letter. Do not indent your paragraphs, but put an extra space between each one.

1. In your first paragraph describe the problems that you had with the product. Identify specific problems with quality.
2. In the next paragraph(s), explain which part of the manufacturing process you think the company needs to improve. Give suggestions for specific steps the company should take to improve their quality in that area, using what you learned in this class. If you have several areas to discuss, use several paragraphs.
3. In the final paragraph, explain how their quality control affects you as a customer and close the letter.

## Writing tips

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You are writing clear, complete sentences. Check over your writing to fix any errors; your advice won't be credible if your writing is not clear and correct.

Keep your comments professional; don't be insulting. Since you can't actually know what the problems are at this company, go ahead and imagine as many production problems as possible.

Your purpose is to remind the company of the importance of quality to their customers.

# ISO 9000 Overview 110

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You are going to write a **short report** that provides an overview of ISO 9000. **Your audience is a small business owner** who has never heard of ISO 9000 but is interested in improving the quality of his/her product. It would be helpful if you know someone to keep in mind as your audience.

1. Write an **introductory paragraph** that explains what ISO 9000 is and why a company would want to use it. Be sure to use your own words and try to apply the concepts to a specific business.
2. Then write **several paragraphs** that explain the steps a company would have to go through to become ISO 9000 registered. Use the vocabulary list at the beginning of the class to help you and underline any that you use in your report.
3. In a **final paragraph**, explain how important continuous improvement is to business success. Give specific examples that would apply to your audience and be sure to make the connection between continuous improvement and ISO 9000.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

When you write a report, you must consider the **audience** who will read your report. What details will they need explained in order to understand the information?

**Clear, logical organization** helps your audience as well. Use **transition words** like *next, then, when, after, before, also*. Repeat important terms throughout the report to make connections clear.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader. **Read** your report **out loud** when you are done to help you check for errors or confusing structures.

# Intro to Six Sigma 170

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After you complete the class, return to the page with the class vocabulary list on it.

As you write the following **report**, use as many of those terms as possible. You can refer to specific lesson pages as needed, but write primarily from your own memory. This helps CEMENT the information into your brain!

Your audience for this report is a new employee in the parts department in a company that uses Six Sigma.

**First of all**, write an **introductory paragraph** that explains what Six Sigma is. Be sure to use your own words in this paragraph, although you should underline any terms you use from the vocabulary list.

**Then** write a series of **connected paragraphs** that explains each of the “5 Ms and 1 P.” Give a specific example for each of them and explain how they fit into Six Sigma.

**Conclude** with a paragraph that explains how Six Sigma relies on data and how that might impact workers on a factory floor or parts department.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

When you write a report, you must consider the **audience** who will read your report. What details will they need explained in order to understand the information?

**Clear, logical organization** helps your audience as well. Use **transition words** like *next*, *then*, *when*, *after*, *before*, *also*. **Repeat** important terms throughout the report to make connections clear.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader.

# Metal Removal Processes 110

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You are going to write a short report that provides an overview of metal removal processes. Write for an audience who has only seen finished products, but never seen machine tools in action.

After you complete the class, return to the page with the class vocabulary list on it.

1. Begin with an introductory paragraph that explains why removing metal might be necessary. Remember, you are writing for an audience who has never really thought about this topic before.
2. Your next paragraph should explain the two general types of metal removal processes: traditional and nontraditional. Emphasize the differences between them.
3. Now your next paragraph should focus on the specifics of traditional methods of metal removal. Mention the three main methods. Remember, your reader has never seen these tools in action.
4. This paragraph should explain the non-traditional methods of metal removal. Use basic explanations without too much detail; these methods are very technical. Can you explain in a way that simplifies yet makes the methods clear? Do write out any abbreviations you use.
5. Finally, write a paragraph that summarizes the topic. You might do this by picking a specific metal object your audience might own or use and helping them to imagine how it was made.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

When you write a report, you must consider the **audience** who will read your report. What details will they need explained in order to understand the information?

**Clear, logical organization** helps your audience as well.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader.

# What Is Cutting? 120

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After you complete the class, return to the page with the class vocabulary list on it.

Imagine that your shop is hiring several new employees at once and different people will be training them. Your boss wants you to **write up a short report** explaining the importance of chips in the manufacturing process, so these new hires will pay attention to what just looks like scrap.

1. This assignment leaves the organization of your report up to you. Think before you start and create a **rough list or outline** to help organize the material.
2. Please write a report of several paragraphs that explains what chips are, what they indicate, and how they can be used to improve manufacturing processes and results.
3. When you are done, **read your report out loud** to check for any errors or sections that are confusing. Underline any class vocabulary that you use in this report.

## Writing tips

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Remember, you should assume the new employees know very little. Explain any specialized terms you use. Begin with basic information and build from there. Explain the topic in a logical order, with clear, complete sentences.

Make sure your paragraphs are not too long. Each paragraph should cover one aspect of the topic. Begin each paragraph with a sentence that states the key point that paragraph will cover.

# Machines for Metal Cutting 130

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Open a Word document on your screen, next to the vocabulary list. Now place each one of the more than 70 vocabulary terms next to one of the categories below. Some names for parts of machines or types of cuts can go in more than one place. You might place a term in a category that is only loosely related to that category.

After you complete the class, return to the page with the class vocabulary list on it.

After you sort the terms, write ONE sentence for each category that uses at least TWO of the terms in that category. Underline the terms. Create sentences that show how the terms related to each other; feel free to include more than two terms in a sentence if you can.

Saws

Lathes

Milling Machines

Drill Presses

Broaching Machines

CNC Machine

Other Type of Machine

General Term

# Cutting Processes 140

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When you have finished this class, review the “Interactive Lab” in Lesson 13.

You are going to write several paragraphs that explain the main point of the Lab. Refer to the vocabulary list for the class to help you use as many terms on the list as possible, and underline them when you do use them.

1. In your beginning paragraph explain what Nick’s basic situation in the Lab is. Give enough detail so that someone who has not seen the Lab would understand.
2. In the next paragraph explain the mistake that Nick made. What decision did he make and what was the result?
3. In your next paragraph explain the correct order of operations. Describe what each step accomplished and which were more accurate.
4. In your final paragraph explain how many different factors Nick needs to consider as he decides how to make a part. Use the advice of the engineer at the end to help you.

## Writing tips

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As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Also make sure that **each sentence is complete and clear** on its own. Read your work out loud when you are done to help you find confusing or incorrect sections.



# Sawing Fundamentals 155

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You are operating a band saw in a shop, and you have just installed a new blade for a job you haven't run before. You notice that the chips coming out of the saw are not looking good.

Write several paragraphs that explain **all** the variables that you will have to think about as you try to figure out the problem. You should use as many terms as possible from the vocabulary list and underline them when you do. Write as though you are explaining the situation to a friend after work, someone who does not know much about the basics of sawing.

After you complete the class, return to the page with the class vocabulary list on it.

## Writing tips

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As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Also make sure that **each sentence is complete and clear** on its own. Read your work out loud when you are done to help you find confusing or incorrect sections.

As you write, keep in mind what your audience already knows. In this case, not much, so explain your underlined vocabulary as you go.

# Press Basics 110

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After you complete the class, return to the page with the class vocabulary list on it.

You are working in a plant that uses many types of stamping machines to produce a variety of parts. Your boss has asked you to write a short report on the several kinds of stamping equipment for new employees in the shipping/receiving department. These employees do not operate machinery, but they need a general knowledge so they understand the different supplies and parts they will be handling.

**Write a report of several paragraphs. Explain the main types of stamping machine, their power sources, and their strengths and weaknesses. Underline any vocabulary terms as you use them.**

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

When you write a report, you must consider the **audience** who will read your report. What details will they need explained in order to understand the information?

**Clear, logical organization** helps your audience as well. As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use **transition words** like *next, another, when, also*. **Repeat** important terms throughout the report to make connections clear.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader. Your use of capital letters and punctuation help the reader understand your information.

# Press Brake Components 110

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The differences and similarities between mechanical and hydraulic press brakes are important to understand.

**Write a report** that explains both the similarities and the differences between these two types of press brakes. Underline any class vocabulary that you use as you write.

After you complete the class, return to the page with the class vocabulary list on it.

1. Your *first* paragraph should introduce the reader to what a press brake is. This will explain the basic similarities between any two press brakes. What do they all have in common?
2. Your *next* paragraph should begin with a sentence that tells us which kind of press brake you are going to explain in depth first. This is a topic sentence. Give all the detail your reader needs to understand what makes this type of press brake different from the other.
3. Your *next* paragraph will be similar but will cover the details of the other type of press brake.
4. *Now* use a paragraph to discuss the strengths and weaknesses of mechanical press brakes. Help your reader understand all the decisions a producer must make in order to choose between types of equipment.
5. Write *another* paragraph that discusses the strengths and weaknesses of hydraulic press brakes.
6. *For your concluding paragraph*, point out that CNC press brakes are becoming more common and explain why.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

**Clear, logical organization** is a must in a report. As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use **transition words** like *next*, *another*, *when*, *also*. Transition words in the **instructions above** are italicized.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader. Your use of capital letters and punctuation also help the reader understand your information.

# Punch and Die Operations 120

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After you complete the class, return to the page with the class vocabulary list on it.

Please write a short report that describes the process of stamping metal. Begin by carefully describing the way that a stamp actually shears the metal. Then go on to explain the difference between blanking and punching.

Underline all the class vocabulary words that you use.

## Writing tips

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As you begin a paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Also make sure that **each sentence is complete and clear** on its own. Read your work out loud when you are done to help you find confusing or incorrect sections.

# Metal Manufacturing 140

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After it is refined, molten steel must be shaped and cooled. Please write a short report that explains ingot casting and continuous casting. Describe their similarities and differences, paying special attention to the advantages of either process.

After you complete the class, return to the page with the class vocabulary list on it.

Your report should have several paragraphs. Provide enough detail for an audience who has never read about steel before.

## Writing tips

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Use **transition words** like *next*, *another*, *when*, *also*. **Repeat** important terms throughout the report to make connections clear.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader. Your use of capital letters and punctuation help the reader understand your information.

# What Is Soldering 110

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You are working for a small business that requires you to do some hand-soldering. Therefore, the parts/shipping department must order supplies that are used in soldering. A new employee was just hired who has very little experience in manufacturing, so he is not familiar with the terminology for all the supplies he'll be handling.

Your boss has asked you to write a short report that will explain the basic kinds of materials and tools that are used in hand soldering.

1. Your first paragraph should introduce the basic definition of what soldering is and why it is used.
2. Your second paragraph should explain the types of solder.
3. Your next paragraph should describe the several types of flux.
4. Finally, explain the basic equipment required to hand solder.

Remember that you are writing this report for an employee who is not familiar with the topic, so be sure to explain all the terms you use clearly.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

When you write a report, you must consider the **audience** who will read your report. What details will they need explained in order to understand the information?

**Clear, logical organization** helps your audience as well. Repeat important terms throughout the report to make connections clear.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader.

**Read** your report **out loud** when you are done to help you check for errors or confusing structures.

# Processes for Applying Coatings 140

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Electrocoating is a fairly complicated process. When it is used in manufacturing, there are pros and cons for choosing that coating method.

Write a short report that explains in general terms what electrocoating is. Then explain the pros and cons of using electrocoating in a manufacturing process. You will decide how many paragraphs to use to present your information.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

**Clear, logical organization** helps your audience as well. Use **transition words** like *next, then, when, after, before, also*. Repeat important terms throughout the report to make connections clear. Be sure to explain technical terms as you go.

Make sure your paragraphs are not too long. Each paragraph should cover one aspect of the topic. Begin each paragraph with a sentence that states the key point that paragraph will cover.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader. **Read** your report **out loud** when you are done to help you check for errors or confusing structures.

# Intro to Assembly 100

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This class has explained the major methods of assembly used in manufacturing, including mechanical fastening, adhesive bonding, welding, and the assembly line (automated and manual).

Think about the vehicle you drove today. You should be able to think of an example of each of these kinds of assembly used in some part of its manufacture.

Write a report of several paragraphs that explains each of the major methods of assembly. Give an example from your vehicle for each of the methods.

Imagine that your audience for this report is a car-buyer who wants to know why each different method would be used for making the best possible vehicle for the customer to buy.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

When you write a report, you must consider the **audience** who will read your report. What details will they need explained in order to understand the information?

**Clear, logical organization** helps your audience as well. As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use **transition words** like *next*, *another*, *when*, *also*. **Repeat** important terms throughout the report to make connections clear.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader. Your use of capital letters and punctuation help the reader understand your information.



# Tools for Threaded Fasteners 120

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You have applied for a job at two different manufacturing plants. In one of them, you were given a tour where you noticed that workers were using electric fastening tools. In the other plant, you know someone who works there who uses pneumatic tools to fasten the screws in the product.

Write several paragraphs that explain the differences between using electric and pneumatic tools. Be sure to explain both the advantages and disadvantages of each.

## Writing tips

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Make sure your paragraphs are not too long. Each paragraph should cover one aspect of the topic. Begin each paragraph with a sentence that states the key point that paragraph will cover.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader.

**Read** your paragraphs **out loud** when you are done to help you check for errors or confusing structures.

# Mechanical Properties of Metals 120

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After you complete the class, return to the page with the class vocabulary list on it.

Write a report (3–5 paragraphs) about a manufactured object of your choice. Using the words from the vocabulary list, describe the mechanical properties that are related to your object. For example, use the fork from the class material. Underline all vocabulary words used in your report.

1. Your first paragraph should introduce the reader to what your item is. Tell the reader what it is made of and what it is to be used for.
2. Your next paragraph(s) should begin with a sentence that tells the reader which properties are needed for your object to perform its task.
3. Your next paragraph(s) should tell about ways to test the material that your object is made of.

## Writing tips

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A report is a type of writing used in the workplace that provides facts to inform the reader. When you write a report, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Metal Classification 150

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Using the information on slide 9, write a paragraph (5–7 sentences) telling what ingredients are in a metal classified as ASI-SAE 1220. Use words from the vocabulary list when you can. Underline all vocabulary words used in your paragraph.

After you complete the class, return to slide 9 of the lesson.

1. The first sentence of your paragraph should introduce the reader to what 1220 steel is.
2. Your next three or four sentences should tell about the ingredients and type of steel 1220 is.
3. Your last sentence should give an ending for the paragraph.

## Writing tips

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The basic rule to paragraphs is “Keep one idea to one paragraph.” A paragraph is a type of writing used to highlight a single item or theme. When you write a paragraph, you must know the audience who will read it. Use words the reader will be able understand.

When you start a paragraph, give your reader the topic covered in that paragraph. It will be the only thing covered in that paragraph.

Make sure that each sentence in the paragraph is complete and clear. One sentence that is hard to understand can make the entire paragraph not make sense.

# Physical Properties of Metals 130

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After you complete the class, return to the page with the class vocabulary list on it.

Write a comparative essay (at least 5 paragraphs) about the difference between two types of metal from your lesson. An example would be copper and aluminum. You could compare their mass, conductivity, and density. Underline all vocabulary words used in your report.

1. Your first paragraph should tell the reader the two items or topics you are comparing. You should list three areas for comparing them. Examples would be color, weight, or other physical properties.
2. Each of the next three paragraphs should compare the two items or topics according to the areas listed in the first paragraph.
3. Your last paragraph should review the three areas of comparison again and close the essay.

## Writing tips

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A comparative essay is a type of writing used in the workplace that provides facts to inform the reader. When you write an essay, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the essay?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Structure of Metals 110

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Using the words from the vocabulary, write a paragraph (5–7 sentences) that tells the components of an atom and what each of their electrical charge is. Underline all vocabulary words used in your report.

After you complete the class, return to the page with the class vocabulary list on it.

1. The first sentence of your paragraph should introduce the reader to what the parts of an atom are.
2. Your next three or four sentences should tell what each part of the atom is and its purpose in detail. Be sure to tell what the electrical charge for each part is.
3. Your last sentence should give an ending for the topic and give a good starting point for the next topic.

## Writing tips

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The basic rule to paragraphs is “Keep one idea to one paragraph.” A paragraph is a type of writing used to highlight a single item or theme. When you write a paragraph, you must know the audience who will read it. Use words the reader will be able understand.

When you start a paragraph, give your reader the topic covered in that paragraph. It will be the only thing covered in that paragraph.

Make sure that each sentence in the paragraph is complete and clear. One sentence that is hard to understand can make the entire paragraph not make sense.

# Forces of Machines 110

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After you complete the class, return to the page with the class vocabulary list on it.

Write a comparative essay (at least 5 paragraphs) about the difference between rotary and linear motion. You can compare the way they are measured, how momentum affects them, and the forces that act on them. Underline all vocabulary words used in your report.

1. Your first paragraph should tell the reader the two items or topics you are comparing. You should list three areas for comparing them. Examples would be color, weight, or other physical properties.
2. Each of the next three paragraphs should compare the two items or topics according to the areas listed in the first paragraph.
3. Your last paragraph should review the three areas of comparison again and close the essay.

## Writing tips

---

A comparative essay is a type of writing used in the workplace that provides facts to inform the reader. When you write an essay, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Intro to Mechanical Systems 100

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Mechanical advantage is key in industry and manufacturing. This class describes a number of systems for creating mechanical advantage, and most of them are a part of the everyday tools of your life.

Pick three of the ways of creating mechanical advantage this class describes. Write a paragraph for each that explains how it works and gives examples from your experience.

## Writing tips

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As you begin a paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Also make sure that **each sentence is complete and clear** on its own. Read your work out loud when you are done to help you find confusing or incorrect sections.

# Lubricant Fundamentals 130

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This class discusses the purpose of lubrication, types of lubricants, and lubricant application and delivery methods.

Describe the three main types of lubricants and how these lubricants are applied to machines. Write your answer in three paragraphs.

Be sure to use as many vocabulary words as possible from the vocabulary list at the beginning of the class and underline each one that you do use.

## Writing tips

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As you begin a paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Also make sure that **each sentence is complete and clear** on its own. Read your work out loud when you are done to help you find confusing or incorrect sections.



# Power Transmission Components 120

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Choose two types of power transmission from the lesson. Write a comparative essay (at least 5 paragraphs) about the difference between them. Examples are what type of machine they would be used in, durability, and maintenance needed. Underline all vocabulary words used in your report.

After you complete the class, return to the page with the class vocabulary list on it.

1. Your first paragraph should tell the reader the two items or topics you are comparing. You should list three areas for comparing them. Examples would be color, weight, or other physical properties.
2. Each of the next three paragraphs should compare the two items or topics according to the areas listed in the first paragraph.
3. Your last paragraph should review the three areas of comparison again and close the essay.

## Writing tips

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A comparative essay is a type of writing used in the workplace that provides facts to inform the reader. When you write an essay, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Basics of the CNC Turning Center 120

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After you complete the class, return to the page with the class vocabulary list on it.

Write a paragraph (5–7 sentences) about the different types of lathes. Using the words from the vocabulary list, describe how each operates and the differences between them. Underline all vocabulary words used in your report.

1. The first sentence of your paragraph should introduce the reader to what your topic is.
2. Your next three or four sentences should tell about your topic with more detail.
3. Your last sentence should give an ending for the topic and give a good starting point for the next topic.

## Writing tips

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The basic rule to paragraphs is “Keep one idea to one paragraph.” A paragraph is a type of writing used to highlight a single item or theme. When you write a paragraph, you must know the audience who will read it. Use words the reader will be able to understand.

When you start a paragraph, give your reader the topic covered in that paragraph. It will be the only thing covered in that paragraph.

Make sure that each sentence in the paragraph is complete and clear. One sentence that is hard to understand can make the entire paragraph not make sense.

# Basics of the CNC Swiss-Type Lathe 135

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Write a report (3–5 paragraphs) about the type of machining the CNC Swiss-type lathe is best suited for. Using the words from the vocabulary list, describe the operations that the lathe is able to do. Underline all vocabulary words used in your report.

After you complete the class, return to the page with the class vocabulary list on it.

1. Your first paragraph should introduce the reader to what your item is. Tell the reader what it is made of and what it is to be used for.
2. Your next paragraph(s) should begin with a sentence that tells the reader which properties make it the best choice to perform its task.
3. Your next paragraph(s) should summarize the details of the report and contain a closing sentence.

## Writing tips

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A report is a type of writing used in the workplace that provides facts to inform the reader. When you write a report, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Basics of the Engine Lathe 115

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After you complete the class, return to the page with the class vocabulary list on it.

Write a report (3–5 paragraphs) describing the parts of the engine lathe. Use your own words; do not plagiarize. Underline all vocabulary words used in your report.

1. Your first paragraph should introduce the reader to the engine lathe. Tell the reader briefly what it is and some of the key components.
2. Your next paragraph(s) should talk about the components in more detail.
3. Your last paragraph(s) should summarize your report and provide a closing sentence.

## Writing tips

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**Plagiarize:** to use the words or ideas of another person as if they were your own words or ideas.

A report is a type of writing used in the workplace that provides facts to inform the reader. When you write a report, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Basics of the Manual Mill 110

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Lesson 13 explains the common milling operations that the manual mill can perform.

Write a short report that describes each of the different milling operations. Use your own words to explain the different kinds of cutting that take place with each. Be sure to describe the resulting shapes that each operation creates.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

When you write a report, you must consider the **audience** who will read your report. What details will they need explained in order to understand the information?

**Clear, logical organization** helps your audience as well. As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use **transition words** like *next*, *another*, *when*, *also*. **Repeat** important terms throughout the report to make connections clear.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader. Your use of capital letters and punctuation help the reader understand your information.

# Basics of the CNC

## Machining Center 130

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After you complete the class, return to the page with the class vocabulary list on it.

Write a paragraph (5–7 sentences) about what a CNC machining center is used for. Using the words from the vocabulary list, describe how it works, what kind of surfaces it works best on, and what functions it can perform. Underline all vocabulary words used in your report.

1. The first sentence of your paragraph should introduce the reader to the CNC machining center.
2. Your next three or four sentences should tell about how it works, the surfaces it works best on, and the functions it can perform.
3. Your last sentence should summarize the CNC machining center and its capabilities.

### Writing tips

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The basic rule to paragraphs is “Keep one idea to one paragraph.” A paragraph is a type of writing used to highlight a single item or theme. When you write a paragraph, you must know the audience who will read it. Use words the reader will be able to understand.

When you start a paragraph, give your reader the topic covered in that paragraph. It will be the only thing covered in that paragraph.

Make sure that each sentence in the paragraph is complete and clear. One sentence that is hard to understand can make the entire paragraph not make sense.

# CAD/CAM Overview 160

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Write a report (3–5 paragraphs) that describes the stages of the CAD/CAM process. Underline all vocabulary words used in your report.

After you complete the class, return to the page with the class vocabulary list on it.

1. Your first paragraph should introduce the reader to the process. Tell the reader briefly what the steps in the process are.
2. Your next paragraph(s) should begin with a sentence that tells the reader what the first step of the process is and then give more information about it. Continue with a paragraph for each step in the process.
3. Your last paragraph should summarize the process and provide a closing sentence.

## Writing tips

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A report is a type of writing used in the workplace that provides facts to inform the reader. When you write a report, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# CNC Coordinates 140

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After you complete the class, return to the page with the class vocabulary list on it.

Using the words from the vocabulary list, write a paragraph (5–7 sentences) describing the three axes used in CNC machining. Inform the reader what the right hand rule is to locate which axis is being used. Underline all vocabulary words used in your report.

1. The first sentence of your paragraph should introduce the reader to what your topic is.
2. Your next three or four sentences should tell about your topic with more detail.
3. Your last sentence should give an ending for the topic and give a good starting point for the next topic.

## Writing tips

---

The basic rule to paragraphs is “Keep one idea to one paragraph.” A paragraph is a type of writing used to highlight a single item or theme. When you write a paragraph, you must know the audience who will read it. Use words the reader will be able understand.

When you start a paragraph, give your reader the topic covered in that paragraph. It will be the only thing covered in that paragraph.

Make sure that each sentence in the paragraph is complete and clear. One sentence that is hard to understand can make the entire paragraph not make sense.



# History and Definition of CNC 100

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Write a comparative essay (at least 5 paragraphs) that talks about the differences and similarities of NC and CNC machines. Underline all vocabulary words used in your report.

After you complete the class, return to the page with the class vocabulary list on it.

1. Your first paragraph should briefly tell the reader the two systems you are comparing. You should list three areas for comparing them. Examples would be how they operate, advantages, and disadvantages.
2. Each of the next three paragraphs should compare the two systems in greater detail.
3. Your last paragraph should review the three areas of comparison again and close the essay.

## Writing tips

---

A comparative essay is a type of writing used in the workplace that provides facts to inform the reader. When you write an essay, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

## Part Program 150

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After you complete the class, return to the page with the class vocabulary list on it.

Using the words from the vocabulary list, write a paragraph (5–7 sentences) describing what is included in a part program. Underline all vocabulary words used in your report.

1. The first sentence of your paragraph should introduce the reader to what a part program is.
2. Your next three or four sentences should tell about the components of the parts program.
3. Your last sentence should give a closing for the paragraph.

### Writing tips

---

The basic rule to paragraphs is “Keep one idea to one paragraph.” A paragraph is a type of writing used to highlight a single item or theme. When you write a paragraph, you must know the audience who will read it. Use words the reader will be able understand.

When you start a paragraph, give your reader the topic covered in that paragraph. It will be the only thing covered in that paragraph.

Make sure that each sentence in the paragraph is complete and clear. One sentence that is hard to understand can make the entire paragraph not make sense.

# What Is Oxyfuel Welding? 100

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Write a report (3–5 paragraphs) describing the three jobs detailed in your lessons that can be done with an oxyfuel torch. Underline all vocabulary words used in your report.

After you complete the class, return to the page with the class vocabulary list on it.

1. Your first paragraph should introduce the reader to the oxyfuel torch. Tell the reader what jobs it can be used for.
2. Your next paragraph(s) should begin with a sentence that tells the reader which job you are talking about. Give some details about that job and start a new paragraph for the next job.
3. Your last paragraph should summarize the jobs that an oxyfuel torch can be used to do followed by a closing sentence.

## Writing tips

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A report is a type of writing used in the workplace that provides facts to inform the reader. When you write a report, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Oxyfuel Welding Safety 105

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After you complete the class, return to the page with the class vocabulary list on it.

Write a paragraph (5–7 sentences) detailing the proper procedure for turning off an oxyfuel torch after use. Use your own words. Do not copy the directions word for word from the lesson. This would be plagiarizing which is explained below.

1. The first sentence of your paragraph should introduce the reader to what your topic is.
2. Your next three or four sentences should tell about your topic with more detail.
3. Your last sentence should give an ending for the topic and give a good starting point for the next topic.

## Writing tips

---

**Plagiarize:** to use the words or ideas of another person as if they were your own words or ideas.

The basic rule to paragraphs is “Keep one idea to one paragraph.” A paragraph is a type of writing used to highlight a single item or theme. When you write a paragraph, you must know the audience who will read it. Use words the reader will be able understand.

When you start a paragraph, give your reader the topic covered in that paragraph. It will be the only thing covered in that paragraph.

Make sure that each sentence in the paragraph is complete and clear. One sentence that is hard to understand can make the entire paragraph not make sense.

# Overview of Weld Types 130

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Write a comparative essay (at least 5 paragraphs) about at least two of the weld types from your lesson. Tell of where they would be used, their advantages, and disadvantages. Underline all vocabulary words used in your report.

After you complete the class, return to the page with the class vocabulary list on it.

1. Your first paragraph should tell the reader the two weld types you are comparing. You should list three areas for comparing them. Examples would be position, preparation, and application.
2. Each of the next three paragraphs should compare the two weld types according to the areas listed in the first paragraph but in more detail.
3. Your last paragraph should review the three areas of comparison again and close the essay.

## Writing tips

---

A comparative essay is a type of writing used in the workplace that provides facts to inform the reader. When you write an essay, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Surface Preparation for Coatings 120

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After you complete the class, return to the page with the class vocabulary list on it.

Write a report (3–5 paragraphs) that tells the reader about the importance of surface preparation for coatings. Underline all vocabulary words used in your report.

1. Your first paragraph should introduce the reader to the importance of surface preparation for coatings. Tell the reader about the different surface preparation methods.
2. Your next paragraph(s) should give details about each of the surface preparation methods.
3. Your last paragraph should summarize the details of the report and provide a closing sentence.

## Writing tips

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A report is a type of writing used in the workplace that provides facts to inform the reader. When you write a report, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Intro to Robotics 110

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This class presents the basic components and applications of robots in manufacturing.

Write a short report describing how robots are used in manufacturing and the three-dimensional coordinate system used to program robots.

You will decide how many paragraphs long your report should be and how to organize that material you will explain. Be sure to use as many vocabulary words from the list at the beginning of the class as possible.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

**Clear, logical organization** helps your audience understand the information. As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use **transition words** like *next*, *another*, *when*, *also*. **Repeat** important terms throughout the report to make connections clear.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader. Your use of capital letters and punctuation help the reader understand your information.

# Applications for Robots 130

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After you complete the class, return to the page with the class vocabulary list on it.

Write a comparative essay (at least 5 paragraphs) that talks about the differences between robotic and human workers. Underline all vocabulary words used in your report.

1. Your first paragraph should tell the reader the two items or topics you are comparing. You should list three areas for comparing them like efficiency, speed, and reliability.
2. Each of the next three paragraphs should compare robots and humans according to the areas listed in the first paragraph.
3. Your last paragraph should summarize the comparisons made and have a closing sentence.

## Writing tips

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A comparative essay is a type of writing used in the workplace that provides facts to inform the reader. When you write an essay, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.



# End Effectors 125

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Using the words from the vocabulary list, write a paragraph (5–7 sentences) about the types of end effectors and their uses. Underline all vocabulary words used in your report.

1. The first sentence of your paragraph should introduce the reader to what an end effector is.
2. Your next three or four sentences should tell about them with more detail.
3. Your last sentence should be a closing sentence.

After you complete the class, return to the page with the class vocabulary list on it.

## Writing tips

---

The basic rule to paragraphs is “Keep one idea to one paragraph.” A paragraph is a type of writing used to highlight a single item or theme. When you write a paragraph, you must know the audience who will read it. Use words the reader will be able understand.

When you start a paragraph, give your reader the topic covered in that paragraph. It will be the only thing covered in that paragraph.

Make sure that each sentence in the paragraph is complete and clear. One sentence that is hard to understand can make the entire paragraph not make sense.

# Identifying Problems 180

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After you complete the class, return to the page with the class vocabulary list on it.

Write a report (3–5 paragraphs) describing what troubleshooting is and why it is important. Underline all vocabulary words used in your report.

1. Your first paragraph should introduce the reader to troubleshooting. Tell the reader briefly what it is and some of the reasons why it is important.
2. Your next paragraph(s) should talk about the reasons why it is important in more detail.
3. Your last paragraph(s) should summarize your report and provide a closing sentence.

## Writing tips

---

A report is a type of writing used in the workplace that provides facts to inform the reader. When you write a report, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Basic Measurement 110

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This class describes several types of manufacturing measurement devices and how they are used.

Choose five different types of measurement devices the class described and think about how each is used.

You will write a short report explaining the importance of measurement in manufacturing.

In your first paragraph, explain why accurate measurement is necessary in manufacturing.

Next, describe the first type of measurement device and give examples of when it might be used.

Cover five different devices in five short paragraphs.

In your last, seventh paragraph, conclude with your thoughts on why workers might struggle to do precise and correct measurements on the job.

## Writing tips

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A **report** is a standard type of writing used in industry that provides factual information to inform the reader.

When you write a report, you must consider the **audience** who will read your report. What details will they need explained in order to understand the information?

**Clear, logical organization** helps your audience as well. As you begin each paragraph, give your reader a general statement of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use **transition words** like *next*, *another*, *when*, *also*. **Repeat** important terms throughout the report to make connections clear.

Also make sure that **each sentence is complete and clear** on its own. If a sentence is confusing, the whole report may not make sense to your reader. Your use of capital letters and punctuation help the reader understand your information.

# Linear Instrument Characteristics 115

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After you complete the class, return to the page with the class vocabulary list on it.

Using the words from the vocabulary list, write a paragraph (5–7 sentences) about the importance of accuracy in linear measurement. Underline all vocabulary words used in your report.

1. The first sentence of your paragraph should introduce the reader to why accuracy is important.
2. Your next three or four sentences should tell about accuracy in more detail.
3. Your last sentence should be a closing sentence for the paragraph.

## Writing tips

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The basic rule to paragraphs is “Keep one idea to one paragraph.” A paragraph is a type of writing used to highlight a single item or theme. When you write a paragraph, you must know the audience who will read it. Use words the reader will be able to understand.

When you start a paragraph, give your reader the topic covered in that paragraph. It will be the only thing covered in that paragraph.

Make sure that each sentence in the paragraph is complete and clear. One sentence that is hard to understand can make the entire paragraph not make sense.

# Basics of Manufacturing Costs 140

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Write a comparative essay (at least 5 paragraphs) about two types of costs discussed in your lesson. You could talk about what type of things fall into each category, what can be done to control costs, and whether the costs are fixed, variable, or semi-variable. Underline all vocabulary words used in your report.

After you complete the class, return to the page with the class vocabulary list on it.

1. Your first paragraph should tell the reader the two cost types you are comparing. You should list three areas for comparing them such as those listed above.
2. Each of the next three paragraphs should compare the cost types according to the areas listed in the first paragraph but in more detail.
3. Your last paragraph should review the three areas of comparison again and close the essay.

## Writing tips

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A comparative essay is a type of writing used in the workplace that provides facts to inform the reader. When you write an essay, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Essentials of Communication 120

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After you complete the class, return to the page with the class vocabulary list on it.

Write a report (3–5 paragraphs) discussing three areas of communication you could improve on based on things learned in your lessons. Underline all vocabulary words used in your report.

1. Your first paragraph should introduce the reader to your areas in need of improvement. Tell the reader briefly what they are.
2. Your next paragraph(s) should talk about the areas in need of improvement in more detail.
3. Your last paragraph(s) should summarize your report and provide a closing sentence.

## Writing tips

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A report is a type of writing used in the workplace that provides facts to inform the reader. When you write a report, you must know the audience who will read your report. How much detail do you need to give for the reader to understand the report?

When you start each paragraph, give your reader an idea of the topic covered in that paragraph and then provide the details. Each paragraph should focus on one topic.

Use words like *next*, *another*, *when*, *also*. You should also repeat important words throughout the report to make connections clear.

Make sure that each sentence is complete and clear. One confusing sentence can make the entire report difficult to understand.

# Introduction to Maintenance Technology

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Harry W. Hamel and Richard Torraco



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# What Is Arc Welding? 110

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To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

This class discusses the equipment and metals used in welding, the arc welding process, and welding safety.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

To demonstrate your understanding of a key point of this lesson, *describe* the arc welding process by which two pieces of metal are welded together. Use specific details/terminology from the lesson and include at least *four* steps in the process. Explain the process in your own words.

## Writing tips

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Reports are the standard type of writing in technical fields and industry. Reports include factual information, are organized logically for reader understanding, and usually are composed using block paragraphs, which means the paragraphs are not indented. However, writers should skip a line between each paragraph. All sentences in a report should be complete and make sense if read by themselves. To proofread a written project, read each sentence out loud to determine if it makes complete sense by itself.

# Arc Welding Processes 120

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This class provides an overview of several types of welding and the basic process, equipment and materials used in each one. As in most industry systems, the method used is determined by the product, the purpose and the work environment.

To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

In a five-paragraph report, summarize the *advantages* of each of the four main welding processes discussed—SMAW, GMAW, FCAW and GTAW. Compose a separate paragraph for each type. In the fifth paragraph, discuss which of the four methods you would be the most interested in learning, and why.

## Writing tips

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Capital letters are used to help readers understand the writer's message. Note the four acronyms, which stand for the four main types of welding processes, are written in capital letters. Each letter stands for a word, such as SMAW stands for Shielded Metal Arc Welding. Other common uses of capital letters are days of the week, months, exact names of people, products, and businesses, and the personal pronoun I.

# Overview of Weld Types 130

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To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

This class provides an overview of the main types of welds, the parts and uses of a weld, and common defects to avoid in each.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

In a short, *three-paragraph* report, further explain this statement, taken from the Summary section of this class: “Designers must choose joint types based on joint strength, types of materials, and safety concerns.” Using information from the course, explain how *joint strength*, *types of materials*, and *safety concerns* affect the decision of which type of weld to use. Explain each one in a separate paragraph.

## Writing tips

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While almost all writing should be in one’s own words, sometimes one does need to quote another writer. To do so in an informal, in-text way, one identifies the location of the quoted passage, and sets off the exact wording with double quotation marks, as shown in the Writing Assignment above. One should use this technique sparingly, and always provide enough information so the reader could find the original passage.

# Oxyfuel Welding Safety 105

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This class emphasizes the importance of following the best work place safety practices, along with the proper equipment and procedures to follow.

To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

Write a multiple-paragraph report in which you discuss the importance of following careful safety practices at all times when doing this type of welding. Discuss both the short- and long-term consequences of the types of accidents a worker in this field may encounter. In your final paragraph, discuss how careful you are in workplace situations and how your safety awareness could be improved.

## Writing tips

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Remember that one purpose of these short writings is to show that you understand the broad concepts within each class, often in a way that applies to yourself. In all types of these short reports, be sure to refer back to specific information in the class you've just completed to prove your attention to details. Also, when the prompt mentions "multiple-paragraph" report, no exact number of paragraphs is stated. The number of paragraphs is up to you, determined by the main points you want to discuss. Each paragraph should focus on one main point related to the overall topic. Paragraph breaks give the reader a chance to digest the information, then catch a breath before moving on to another point.

# Arc Welding Safety 115

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To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

This class discusses *six* types of potential injuries, and how to prevent each type. In a *three-paragraph* short report, summarize three of these types to show that you understand the type of accident, the causes of that type of accident, and how best to prevent its occurrence. As always, explain each in your own words, and include enough detailed information from the class to prove that you understand these importance concepts.

## Writing tips

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Occasionally, you will be given a choice of topics to respond to. Take your time considering your options, then pick with logical reason. Avoid just doing the first three, as with this prompt, or what you perceive might be the three easiest. One doesn't learn in life by always taking the easy way home.

This class points out many ways a welder can be injured performing this process, along with detailed ways to protect oneself for such accidents, which could affect an injured person for his or her lifetime. As in most workplace safety situations, the best practice is to be constantly aware of potential dangers to oneself and others. Follow all expected safety precautions, no matter how unnecessary they may seem.

# Electrical Units 110

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This class describes how electricity flows and explains the basic units used to measure electricity.

To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

In your own words, describe the overall method by which power sources result in electricity. In your short report, use separate block paragraphs to discuss each power source, and use at least *three* vocabulary terms from the list of Class vocabulary on the Electrical Units class main page.

## Writing tips

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When describing a process, a writer can use the handy words below to separate individual steps. These “transition” words and phrases help the reader follow the writer’s organizational pattern of ideas.

**Time order:** first, second, third, then, next, finally

**Example:** for example, for instance

**Result:** therefore, as a result, consequently

**Contrast:** however, on the other hand

**Addition:** also, besides, furthermore, in addition

# Safety for Electrical Work 115

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To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

You notice that the light bulb flickers in a floor lamp in your house/apartment when you move the lamp. In a short report, describe your problem-solving method that follows the suggested three-part process to 1) recognize the hazard, 2) evaluate the hazard, and 3) control the hazard.

## Writing tips

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Learning in a college class should not disappear after one takes a test over the information. True knowledge is applied to future work and life situations to benefit everyone involved. When composing your short report on this seemingly simple life situation, demonstrate the depth of your awareness by describing in detail how you would go about “solving” this potentially dangerous case of the flickering lamp.

This class presents the principles of electricity, the dangers of electrocution, and the importance of following safety procedures when working with electricity.

# Intro to Circuits 120

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This class describes the basic components of an electrical circuit and explains how they are represented in schematic drawings.

To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

Compose a *four-part* report that describes the components in a basic circuit and the differences between a series, parallel, and combination circuit. Write for a reader who is new to the information, so you will have to define technical terms. Use a *separate* paragraph for each of the four parts of your report.

## Writing tips

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When responding to a writing prompt in a college class, it is crucial to read the prompt carefully. In this case, you are asked to compose a “four-part” report about electrical circuits, with each of the four parts explained in a separate paragraph.

What, exactly, do those directions mean to you the writer? First, you have to figure out the topic for each of the four parts of your report. When you re-read the writing assignment directions you will see that the first part is to “describe the components of a basic circuit.” Then, you are to explain the differences between a series, parallel, and combination circuit. Since there are three types of circuits mentioned, that likely means that each type of circuit should be explained in a separate paragraph. That would result in your four-part report, consisting of four paragraphs total.



## Bonus tip

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Begin each paragraph with a sentence that states the key point or concept that you will explain. For example, the first sentence, which is also called the topic sentence, might state: “There are four important components to a basic circuit. The first component is the Power Source . . .”

Often, being a quality college writer begins with careful reading.

# DC Circuit Components 140

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This class presents important information about the structure of DC circuits, ranging from batteries to breakers, and all components in between.

To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

Compose a short report in which you explain the basic components of a DC circuit, in your own words. Write your report as if you were explaining it to someone who is intelligent, but not familiar with the topic. Use at least *five* terms from the Class vocabulary list in your explanation. Underline or use bold to point out these five terms.

## Writing tips

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A part of being an effective writer or speaker is “audience awareness,” in which one keeps their audience in mind while writing or speaking. One element of being aware of one’s audience is remembering how much that group knows about the topic you are discussing. Never talk or write down to an audience, but be alert to terms or complicated concepts that might have to be defined or explained for the audience to fully understand.

# NEC Overview 150

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To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

Through your work in this class, you should have an idea of the makeup of the manual itself, which includes printed text, tables, and visuals like schematics, diagrams and photographs. In a short two-part report, evaluate your *current reading ability*, which includes interest, comprehension, and retention of information. “Reading” no longer refers to just reading written or printed text, but also applies to understanding charts, graphs and other types of visuals.

## Writing tips

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Any self-evaluation should include a fair balance between strengths and areas for improvement. This lends itself to a simple two-part report that first presents your strengths as a reader, with multiple observations and examples. Then, in the second part, an honest discussion of areas in which you could use improvement. The goal is to be fair, yet kind, to yourself, but also acknowledge how we can all improve in many aspects of life.

This class introduces the National Electrical Code Manual (NEC), its history, sections, and the many ways it is used in industrial career fields. Having completed this class, you should have a good idea of the purpose and content of the NEC manual, and how it presents the most current thought regarding the minimum safety requirements.

# Intro to Magnetism 130

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This class presents the fundamental principles of magnetism and explains its relationship to electricity.

To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

Compose a short report over *one* of the three options listed below with bullet points. You have to respond to only *one* of these topics. Your report should include multiple paragraphs.

- Explain the properties of a basic magnet.
- Explain the relationship between electricity and magnetism.
- Discuss which of these two life sayings better describes friendships and/or relationships in your life—"Birds of a feather flock together" or "Opposites attract".

## Writing tips

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All of these writing prompts include the direction to "edit carefully." What does that mean, exactly? Well, after you have composed your first draft, a college writer should read through the report carefully, checking if all necessary information is included, and that the information is in a logical order.

Then he or she should check that each sentence is complete (has a clear subject and main verb), and makes sense by itself if read alone. Finally, one looks at the word level to catch word mistakes and to make sure capital letters and punctuation marks are used correctly. Most word processing programs will help writers with typos and misspelled words, but this feature will not catch all word mistakes.

# Intro to Fluid Systems 100

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To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

In a short report, argue whether *or* not you believe a truck's windshield washer device is a hydraulic power transmission system. Be sure to use terms, definitions, and/or examples from this class's content to support your position. Your report should include multiple paragraphs.

## Writing tips

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Often the purpose of writing is to inform the reader or to request information. Occasionally, a writer's purpose will be to argue or persuade the reader. A letter of application for a job is an example of persuasive writing.

For this prompt, you are asked to take a position, and to support your opinion with reasonable facts and explanations, using terminology from the class content. Often, there is no clear right or wrong response, but the value of one's writing is how logically the case is made for one's position.

This class provides an introduction to fluid power systems and their components. Key concepts are the definition, and components, of a fluid power transmission system.

# Safety for Hydraulics and Pneumatics 105

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This class presents an overview of safety precautions regarding hydraulic fluids, moving machinery parts, hazardous energy, and general cleanliness guidelines.

To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

In a short report, summarize what you learned about the importance and use of PPE (Personal Protective Equipment), as it pertains to some of the hazards associated with hydraulic and pneumatic systems. Keep the focus on the PPE as a way to avoid accidents.

## Writing tips

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Most know that a basic word can be altered by adding a suffix to the end of the word, usually to show tense, plurality, or possession. A frequent error is to mistake a plural word for a possessive one, as in this example: "The supervisor asked for worker's to work on Saturday." Now, in that use, "workers" is the correct word form, as the word is just plural, which means more than one worker. Often, writers try to be correct by adding the possessive apostrophe, which should be saved for contractions and to indicate possession. Here is an example of a correct possessive use "After meeting with Bill, the supervisor better understood the worker's concern." Bottom line—only use 's if you know for sure the structure is meant to show possession.

# Intro to Pneumatic Components 125

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To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

This class presents an overview of basic pneumatic system components, including the physical properties of air and the complex system of parts and controls in a standard air compressor.

## Writing Assignment

You are attempting to use a standard air compressor to operate a nail gun to complete a construction project. The compressor runs, but the air-nailer does not seem to have enough compression to insert framing nails. Compose a *multi-paragraph* report in which you explain your process for figuring out what is wrong with the air compressor. Use correct terminology regarding the parts of the compressor, and include at least *four* areas you would check for possible problems.

## Writing tips

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We all have plenty of opportunities to solve simple and complex “problems” in the workplace, and in life. A skill most employers look for in an employee is the ability and willingness to think through a problem till a solution is found.

Everyone has his or her own process but effective problem solvers usually (1) gather as much information as they can, (2) look at the problem from as many angles and possible, and (3) start with simple solutions first, then move to more complicated ones. Also, problem solvers will seek advice from learned resources—people or credible printed sources—and ultimately attempt a “fix,” and observe what happens. Remaining calm, rather than becoming frustrated, is also an effective strategy.

# Intro to the Forces of Fluid Power 110

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This class presents a detailed overview of how fluid power systems produce work, a key component to industrial machines.

To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

In a short, three-paragraph report, discuss three important elements regarding energy and/or the use of fluid power that you learned in this class. Discuss each “Wow!” discovery in a separate paragraph, and include an explanation of what you learned that you didn’t know before.

## Writing tips

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Humans “learn” in many different ways. Some learn best by watching, by reading about and listening, or by doing it themselves. This last type are called kinesthetic, or “hands on,” learners. Most learners are a combination of all three. This prompt also practices using paragraphs to convey information/discussion about one idea. To check if you are composing unified paragraphs, compare your first and last sentence of a paragraph to determine if you are still talking about the same topic (or have slipped off track to a new idea).



# Fittings for Fluid Systems 135

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To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

This class discusses types, uses and components of fittings.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

To demonstrate your understanding of the key points regarding the role fittings play in industrial environments, summarize important elements of fittings in fluid systems that you know now that you did not know before you completed this lesson. Try not to refer back to the lesson pages and rely on your own new understanding. Include at least four separate examples of “new” learning.

## Writing tips

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Most people retain only a percentage of what they read or hear, especially when the information is new to them. That is why re-reading complicated information will help move learned concepts and information from short-term memory to long-term recall. Some experts say that true learning has been achieved when the student can teach the concept accurately to another. Before responding to this open-ended prompt, take a few minutes to reflect on the information you were presented in this lesson, and allow the main points to rise to the surface before writing. A brief, jotted outline would help structure the report.

# Intro to Hydraulic Components 120

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This class presents an overview of basic hydraulic system components, ranging from types of fluids used to the purpose and structure of heat exchangers.

To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

In a short, three-paragraph report, compare the *three* types of pumps discussed in this lesson, one pump per paragraph. Use the correct term for each, along with a summary of the basic purpose and components of each. Explain each pump in your own words.

## Writing tips

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When comparing two or more items, a writer usually includes how the items being compared are both alike and different. For a writing exercise like this, each paragraph will follow the same organizational pattern—perhaps identifying the pump, its use, basic components, and then how it is alike, then different, from the other two. The next two comparison paragraphs will follow this same order of ideas. Readers like a consistent pattern.

# Intro to Fluid Conductors 130

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To complete the writing assignments in this course, follow the specific directions of your instructor. Usually, you will be directed to type your final report, single spaced, in a Word document, and submit the file electronically to be graded. All submissions should include a stacked, four-line personal heading in the top left corner, which includes your full name, course name, report number, and full date.

This class provides an overview of fluid power conductors, including pipes, tubing, hose, and manifolds.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

In a short, four-paragraph report, summarize in your own words the pros and cons of each of the *four* types of fluid conductors—pipes, tubing, hose, and manifolds. For each of the four, in addition to a concise summary, also include a way to avoid leakage for that particular conductor.

## Writing tips

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When summarizing information you read, it is important to convey the shortened, yet accurate and complete, body of information in your own words. Avoid copying or cutting and pasting any phrasing that was written by someone else. To truly learn a concept, one must internalize the ideas and information to a point where the writer or speaker can correctly explain that information in his or her own words.

# Preventative Maintenance for Fluid Systems 140

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This lesson discusses the importance of and procedures for preventative maintenance within fluid systems.

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## Writing Assignment

To demonstrate your understanding of the key points regarding the concept of preventative maintenance, describe a preventative maintenance plan for one of these life “systems”—lawn, home, car, or your own physical body. Each of these is a “system” made up of many working parts, all of which need attention or care or the system will not operate as effectively as designed. Again, your goal is to show that you understand the importance and elements of a thoughtful “preventative” maintenance system.

## Writing tips

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Applying learned knowledge to a new situation shows the ability to reason at a higher level than just repeating learned facts. This prompt is a great opportunity to show learning applied to a fresh situation. When given a choice of topics, in this case four different “systems,” one should consider each carefully before picking one to write on. Some will connect with one prompt more than the others. In this case, someone who takes pride in maintaining an attractive yard will be more likely to understand all the “preventative” steps needed to do so. Another person who works to stay in top physical shape will be able to speak to all that goes into maintaining that important system—our physical body.

# Total Productive Maintenance

## Overview 150

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Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

### Writing Assignment

There are several different procedures with a TPM program. In a short, multiple-paragraph report, explain *one* of the procedures listed below, in your own words. Explain each part of the topic so an average reader would understand the information.

Four Types of Maintenance  
Six Big Losses  
Overall Equipment Effectiveness  
Five S's

### Writing tips

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Avoid using weak, vague words to convey what you are trying to say. Here is a list of common word weaklings: things, stuff, this, that, and any other pronoun that doesn't refer to a clear noun. Here is an example of a weak sentence that starts with a pronoun—"This bothered me for the rest of my life." You can see that by itself this sentence does not make clear sense to the reader. Here is an improvement—"Not learning to swim bothered me for the rest of my life." This is another reason to proofread your writing by reading each sentence by itself, out loud, to gauge if it makes complete sense.

This class presents the principles of TPM (Total Productive Maintenance), which includes several standard and innovative procedures for manufacturing goods as efficiently and profitably as possible.

# Lubrication Fundamentals 130

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This class presents a wealth of information about the principles of lubrication, types of lubricants, how they are applied, and their importance in most manufacturing environments.

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Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

The class lessons mention many ways a worker should be careful when selecting, using, monitoring, and storing various types of lubricants. In a three-part report, explain three of these “cautions” regarding lubricants. Explain each one in a separate, well-developed paragraph. Be sure to mention each particular “caution” in the opening sentence of the paragraph.

## Writing tips

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The apostrophe mark (') is used to show possession, as in “the boss’s list of tasks to accomplish,” but it is also used to indicate missing letters in contractions, such as “we’re,” and “won’t.” Avoid using contractions in formal writing. Taking the one more second to write out both words in the contraction sounds more professional. Also, doing so will avoid common mistakes with tricky words like “they’re,” “we’re,” and “it’s.”

# Intro to Mechanical Systems 100

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This class gives a historical overview of simple machines and how they continue to be used in complex machinery.

Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

You are faced with the task of moving several bundles of shingles up onto a roof. Having completed this class on basic machines, explain *three* ways you could move the shingle bundles from the ground to the roof before lunch. In your short, three-part report, explain each of the three methods you consider, and include what basic “machine” principles are used in each.

## Writing tips

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Most technical writing focuses on accuracy, completeness, and ease of reading. However, that doesn’t mean that all such writing has to be lifeless, with no writer’s “voice.” Adding a bit of style, or personality, is fine in most situations, as long as that added “sizzle” doesn’t distract from the important content. After all, as a writer, you are trying to establish a relationship of interest and cooperation with the reader.

# Power Transmission Components 120

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This class gives an overview of specific components in power transmission, including gears, belt and chain drives, clutches, couplings, and bearings. More advanced concepts of prime movers and linear motion are introduced.

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Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

The basic requirement of gears is that they work together to produce a positive result. Gears must mesh together, no matter their size. If they don't, the whole machine grinds to a halt. In a way, this description can be applied to how workers within the same business work together for a common goal. In a short report, explain *three* factors or elements that must be present for workers to work together in the most efficient way. For instance, your instructor believes it is important that all workers understand that everyone's job is important in the big picture, and that all workers should be treated with respect. Identify and explain your three "factors" in three separate, well-developed paragraphs.

## Writing tips

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Sentences are written in a variety of lengths and structures. Much can be said in a short, simple sentence. Other times, multiple related ideas can be combined into an effective sentence. For example, this sentence contains a simple series of three items, separated by commas—"A clutch is used to gradually stop or start the transfer of power, speed, and torque from a prime mover to a load." The use of a series like this is a handy tool for writers, as long as the series remains easy to read and understand.



# Safety for Mechanical Work 100

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Paragraphs do not need to be indented, but there should be a double space between paragraphs. The final draft should be written with complete sentences and carefully edited to correct errors in spelling, grammar, and punctuation/capital letter use. Reports should be at least 200 words long, unless otherwise directed.

## Writing Assignment

Congratulations, you are hired as a safety director for a small manufacturing company that produces backyard and patio furniture. In a five-part report, explain what five areas you would first look at if you were assigned to give a safety report to your boss. Consider what types of possible problem areas would you look for, and how would you go about making the work floor a safer place.

## Writing tips

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Most entry-level positions in a manufacturing industry will not require a lot of written reports. However, most workers will have to fill out forms from time to time, and the goal is to complete these tasks as correctly and completely as possible. Some forms are still filled out by hand, so the writer must form letters clearly, use capital letters correctly, and read and follow all directions. Any missed question or answer that is difficult to read will result in more work for somebody.

This class gives an overview of ways to keep a work site as safe as possible. Any accident risks personal injury, both short- and long-term. All possible steps should be taken to avoid any dangerous situation, for yourself or for others.