Introduction to Drafting
2019-2020
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Unit: *Vocabulary of drafting*	**Time:** *August through December*

Standards Taught

- IDD 1.1 Recognize basic drafting terms and abbreviations
- IDD 1.2 Differentiate basic drafting tools and their uses.
- IDD 6.1 Understand professional drafting practices in the workplace and communication skills.

Differentiation/Assessment:	**Classroom Management and Environment:**	**What will the students be doing?**
Students who needed the extra help received guided notes, extra individual practice, and shortened tests.	*The classroom is set up in a "regular class room" like setting. The desks are in rows with space between students so concentration can be maintained. Overall the environment is structured and has rules and procedures in place.*	*To develop a working knowledge of the vocabulary of drafting students will:* • *Create a drafting Dictionary* • *Assignments which corresponded with the lesson.* • *Assessments* • *Practice using terminology while in class from this moment forward.*
Prior Knowledge Needed	**Vocabulary**	**Assessments**

Other than the ability to read and write there is no prior knowledge needed for this unit of instruction.	*The six to eight vocabulary terms identified at the beginning of each chapter as well as any terms that the student does not know the definition of will be defined and alphabetized and handed in as the final in class assessment.*	*Create a glossary created by the students that answers the essential question for this unit.* *Use appropriate terminology while in class as well as when asking or answering questions.* *Vocabulary review and test at the end of the semester.*
Relevance: It is essential that the students learn to use a working vocabulary in drafting for success in their post-secondary education as well working in the industry.	***Examples:*** *Auxiliary View, Lettering, Hidden Line, Scale, Ellipse, Major Axis, Slope, Piercing Point, Involute System, and so on.*	**Materials Needed:** Computers Drafting Text Internet Pencils Scale Erasing Shields Triangle Set T Square Drafting Boards Scratch Paper Drafting Paper
Reflection: *I like the way that this assignment started at the beginning of the year and continued until the final day of the class. This allowed the information to build on itself and the students to see the interrelationship if the vocabulary that they learned. It was necessary to remind students throughout the semester to keep up with this assignment. Next year I will specify that each student must end up with at least 50 words in their glossary by its due date.*	**Essential Questions:** • *What is the definition of the word?* • *Can it have more than one definition and if so what are all of them?* • *Where is it used in drafting?* • *Is there any room for ambiguity or misunderstanding in the definitions given?* • *Upon Completion will the student be able to keep these definitions in their working vocabulary for the rest of the semester?*	

I will also have them provide me with feedback that they think will make this lesson more effective to future students.	

Unit: *Vocabulary of drafting*	**Time:** *December*

Standards Taught

* IDD 6.1 Understand professional drafting practices In the workplace and communication Skills
* IDD 6.2 Compare career possibilities in the drafting industry.

Differentiation/Assessment:	**Classroom Management and Environment:**	**What will the students be doing?**
Students who needed the extra help received guided notes, extra individual practice, and shortened tests.	*The classroom is set up in a "regular class room" like setting. The desks are in rows with space between students so concentration can be maintained. Overall the environment is structured and has rules and procedures in place.*	• *Internet serchproject into three different careers in drafting or mechanical drawing* • *Record minimum educational requirements, job description, starting and mean salary, employment opportunities, and employment outlook for this career*
Prior Knowledge Needed	**Vocabulary**	**Assessments**
Other than the ability to read and write there is no prior knowledge needed for this unit of instruction.		Students will hand in written reports that will be used as an assessment tool.

Relevance:	***Examples:***	**Materials Needed:**
This assignment allows students to determine if they are interested in this career area.		Computer Internet Paper
Reflection: This assignment went exactly as planned and is worth doing again next year.	**Essential Questions:** • What are the employment opportunities in drafting? • How much does a draftsman make in a year? • How much schooling does a draftsman need? • Where would I have to work in this career?	

Unit: *Drawing to industry standards*	**Time:** *September through October*

Standards Taught

- IDD 1.1 Recognize basic drafting terms and abbreviations
- IDD 1.2 Differentiate basic drafting tools and their uses.
- IDD 2.1 Apply algebraic and trigonometric formulas used in drafting and design.
- IDD 2.2 Understand the various drawing scales used in drafting.
- IDD 3.1 Integrate symbols, lettering and Geometric shapes used on technical drawings.
- IDD 3.2 Illustrate line types recommended by American National Standards Institute (ANSI).
- IDD 3.3 Define dimensioning styles and techniques on metric and imperial drawings.
- IDD 6.1 Understand professional drafting practices in the workplace and communication skills.

Differentiation/Assessment:	**Classroom Management and Environment:**	**What will the students be doing?**
Students who needed the extra help received guided notes, extra individual practice, and shortened tests.	*The classroom is set up in a configuration that allows each student to use three desks one to draw on one for the book or model and one for their drafting supplies. Overall the environment is structured and has rules and procedures in place.*	• *Draw examples of lettering, line spacing, line types and dimensioning.* • *Drawing scale sketches in multiple view drawings of models provided to them.* • *Drawing random tools and objects chosen by them.* • *Practice using terminology while in class from this moment forward.* • *Draw a stool to scale so that they may replicate it from their drawing alone.*
Prior Knowledge Needed	**Vocabulary**	**Assessments**

Students will need to draw upon the vocabulary that they have worked on to this point. They will also need a rudimentary understanding of geometry.	*For the rest of this class students will have access to the glossary that they are creating so that they can continually update it and use it in all of their other lessons for this class.*	*Create multi-view drawings of the seven wooden blocks.* *Lettering practice and an example of their skill in lettering will be assessed.* *Ten drawings of their choice out of the text book.* Formulas worksheet to be completed and used as a reference. Peer reviews of each other's drawings. Drawings of five-point and six point stars using a compass
Relevance: In order to further the students training in the manufacturing and building trades divisions they will need to be able to read and create drawings that others in the industry can obtain and created a standard product even if the draftsman is not present during manufacturing.	***Examples:*** *The drafting text contains examples of all of the drawings that they will be drawing for this section.*	**Materials Needed:** Computers Drafting Text Drafting Board Tee Square Masking tape Pencils Paper Triangles Erasing shields Erasers Scale Three desks Models

Reflection:	**Essential Questions:**
This assignment will be taught in a self-paced format next year to allow more time for the students that need it. This will also allow students with a rapid grasp of the subject matter to advance faster, so that they can pursue more rigorous course work. All in all the students did well this year.	• *What views do I really need to be able to manufacture this model?* • Will I need to leave this line, is it hidden, or is it a reference line that will have to be erased before I am done? • What size of lettering is appropriate for this part of the drawing? • Who is my target end user? • Are my dimensions and lines accurate? • *Can it have more than one definition and if so what are all of them?* • *Where is it used in drafting?*

Unit: *Pectoral Perspectives*	**Time:** *August through December 2019*

Standards Taught

- IDD 1.1 Recognize basic drafting terms and abbreviations
- IDD 1.2 Differentiate basic drafting tools and their uses.
- IDD 4.1 Create orthographic projections
- IDD 4.2 Create isometric and pictorial drawings.

Differentiation/Assessment:	**Classroom Management and Environment:**	**What will the students be doing?**
Students who needed the extra help received guided notes, extra individual practice, and shortened tests.	*The classroom is set up in a "regular class room" like setting. The desks are in rows with space between students so concentration can be maintained. Students will be allowed to rearrange desks to provide for more room for their drafting equipment. Overall the environment is structured and has rules and procedures in place.*	*Upon completion of reading assignments and review questions students will be required update their working glossary and then demonstrate understanding by completing a series of drawings both for practice and assessment. These drawings will include:* • Perspective Drawings • Isometric Drawings • Oblique Drawings

		• Architectural Sketches • Working drawings • Concept drawings
Prior Knowledge Needed	**Vocabulary**	**Assessments**
At this point of instruction students must have a working vocabulary of the basics of drafting as well as an understanding of the lines and tools used in the trade.	*Planes* *Views* *Elevation* *Oblique* *Isometric* *Pictorial drawing* *Line types* *Isometric* *Architectural view* *Axis* *Line of insertion* *Perspective* *Topographical* *Perspective* *Plotting*	*Working Glossary document updates.* *Demonstrate the ability to use the appropriate terminology during classroom discussions as well as during evaluation.* *Relevant drawings completed by the student.* *Evaluation of review questions, quizzes and tests.*
Relevance: Drawings are the meat and bones of a career in drafting. It is very important that the student has the ability to complete several different types of drawings each with varying levels of complexity, and detail.	***Examples:*** *Working drawings* *Blueprints*	**Materials Needed:** Computers Drafting Text Drafting Board Tee Square Masking tape Pencils Paper Triangles Erasing shields Erasers Scale Three desks Models

Reflection: *This assignment will be taught in a self-paced format next year to allow more time for the students that need it. It is important that all students be challenged when completing this lesson. This includes challenging higher achieving students while not discouraging students that may struggle with this lesson. It is important that I as a teacher in this subject matter do not rely on preconceived notions or prejudices. All in all the students did well this year.*	**Essential Questions:** • *What information do these drawings need to impart?* • *How can I present the most needed information with the minimum amount of drawings without confusing my intended user of these drawings?* • *Are these drawings complete enough so that the user of them can manufacture what is being depicted in the drawing?* • *Do I know enough about the manufacturing process to account for it in my drawings?* • *Is my vocabulary complete enough to prevent ambiguity?*	

Unit: Manufacturing Principles	**Time** *November*
Standards Taught	
• IDD 5.1 Identify CAD skills and applications of technical design.	

Differentiation/Assessment:	**Classroom Management and Environment:**	**What will the students be doing?**
Students who needed the extra help received guided notes, extra individual practice, and shortened tests.	*The classroom is set up in a "regular class room" like setting. The desks are in rows with space between students so concentration can be maintained. Students will be allowed to rearrange desks to provide for more room for their drafting equipment. Overall the environment is structured and has rules and procedures in place. Students will also have access to the shop and the tools and materials contained within it.*	• Students will be creating a drawing of a folding camp stool from a completed one, and then building a stool from their drawing. • Students will study the safe use of the tools that they will use to complete this assignment. • Students will have to imagine the manufacturing processes involved in the making of the product, create a layout plan that limits

		waste, and build the product from the sketches that they have created. • Students will compete against each other for the lowest cost of production.
Prior Knowledge Needed	**Vocabulary**	**Assessments**
These students should have taken shop in their seventh and eighth grade years so that they will have prior knowledge of safe tool operation and maintenance.	Cost of production Waste Layout plan Tool parts identification Tool names and functions Bevel and camphor	The major assessment for this unit will be the product that they have created. Completeness of the drawing will be determined by the number of times that it is necessary for them to go back to the classroom to look at the model that their drawing was made from. The stool will be given a passing grade if it looks like the model and if it is able to support the students weight when they sit on it.
Relevance: Drafting is a mainstay of manufacturing. All products are made from sketches that were first done by a draftsman. In order for them to do a good job they must know how their drawings are used in the rest of the process. Building a this stool from their drawing reinforces the need for attention to detail in their drawings.	***Examples:*** • Model camp stool or other desired product.	***Materials Needed:*** Computers Drafting Text Drafting Board Tee Square Masking tape Pencils Paper Triangles Erasing shields Erasers Scale Three desks Models Wood working text

		10’ pine 1” x 6” board Miter box saw Table saw Sanders Band saw Drill press ½” Drill bit Nail gun and brad nails Air compressor 1 ¼” screws #2 Phillips screw driver bit.

Reflection:	**Essential Questions:**
This unit does a very good job of demonstrating the importance of being through when drafting. Every student that has ever completed this assignment has had to go back and look at the model at least once because they either forgot to measure something or they did not pay attention to how the different parts fit together to make the whole product.	• Have I measured everything? • Do I know how all of the parts fit together and in what order? • Do the students demonstrate the ability to use the power and hand tools in a safe and an industry approved manner? • What was the actual cost of making this stool (including labor)? • What would I calculate the retail price of this stool to be and why?

Unit: CAD	**Time** *December*

Standards Taught

- IDD 5.1 Identify CAD skills and applications of technical design.
- IDD 5.2 Apply CAD defaults and preferences to set up a drawing.
- IDD 5.3 Generate drawings and projections using CAD software.

Differentiation/Assessment:	**Classroom Management and Environment:**	**What will the students be doing?**
Students who needed the extra help received guided notes, extra individual practice, and shortened tests.	*The classroom is set up in a "regular class room" like setting. The desks are in rows with space between students so concentration can be maintained. Students will be allowed to rearrange desks to provide for more room for their drafting equipment. Overall the environment is structured and has rules and procedures in place.*	• The student will learn to navigate and use the Sketch Up software program. • Each student will be required to complete three individual drawings using the Sketch Up software.
Prior Knowledge Needed	**Vocabulary**	**Assessments**
Students should have a basic understanding of drafting principals and vocabulary, they should also be somewhat proficient in using various computer applications.	Drawing window Command line Cursor location Coordinates Status display Entities Blocks Patterns	*Students will complete a minimum of three drawings using Sketch up.* *Drawings will be evaluated as to completeness, readability, and neatness.*

	Trim	*Accuracy to the model will be evaluated.*
Relevance: CAD is now the industry standard and it is important that students be exposed to this drafting tool.	***Examples:*** Problems on page 190-191 in text	***Materials Needed:*** Computers Drafting Text Drafting Board Tee Square Masking tape Pencils Paper Triangles Erasing shields Erasers Scale Three desks Models
Reflection: Of all the lessons that I teach this one makes me the most uncomfortable. I will spend the summer becoming more comfortable with using this software.	**Essential Questions:** • How do I use this program to draw the shapes required by the model? • Is there an easier way to navigate in this program? • Once I have mastered drawing something relatively easy can I see the applicability of using this software in drawing something more complicated?	