# Introduction to Drafting & Design

9-12, Career & Technical Education

**Developed By**: Mr. Michael Tirrito & Mr. Vincent Vicchiariello
**Effective Date:** Fall 2022
Scope and Sequence

| Month | Unit | Assessment/Drawing |
|---|---|---|
| September | Principles of Mechanical Design | • Lettering Assessment<br>• Inlaid Linoleum Center Design<br>• Base Plate |
| October | Principles of Mechanical Design | • Adjusting Arm<br>• Key Plate<br>• Template<br>• Micro Drawings: 1, 2, 4, 5 |
| November | Geometry of Drafting | • Micro Drawings: 10, 11, 12, 13<br>• Micro Drawings: 14, 15, 16, 17<br>• Micro Drawings: 18, 23, 24, 25<br>• Micro Drawings: 26, 27, 28 |
| December | Geometry of Drafting | • Conveyor Link<br>• Cover Plate<br>• Gasket<br>• Keyhole Saw Handle<br>• Elliptical Cam |
| January | Geometry of Drafting<br>AutoCAD | • Movie Film Reel<br>• Buick Rear Transmission Gasket<br>• Titlebox Template<br>• ILCD |
| February | AutoCAD | • Base Plate<br>• Adjusting Arm<br>• Key Plate<br>• Template<br>• Clock |
| March | AutoCAD | • Conveyor Link<br>• Cover Plate<br>• Gasket<br>• Keyhole Saw Handle,<br>• Elliptical Cam |
| April | AutoCAD<br>Orthographic Drafting | • Movie Film Reel,<br>• Buick Rear Transmission Gasket<br>• Fig. 7.27 [1-12] |
| May | Orthographic Drafting | • Fig. 7.28 [1-20]<br>• Fig. 7.29 [1-15] |

| | | |
|---|---|---|
| June | Orthographic Drafting | • Fig. 7.30 [1-15]<br>• Final Exam |

| Unit 1 |
|---|
| Principles of Mechanical Drawing |

## Summary and Rationale

Technical drawing, also known as drafting, is the act and discipline of composing drawings that visually communicate how something functions or is to be constructed. Technical drawing is essential for communicating ideas in industry and engineering. To make the drawings easier to understand, people use familiar symbols, perspectives, units of measurement, notation systems, visual styles, and page layout. Together, such conventions constitute a visual language, and help to ensure that the drawing is unambiguous and relatively easy to understand. These drafting conventions are condensed into internationally accepted standards and specifications that transcend the barrier of language making technical drawings a universal means of communicating complex mechanical concepts.

## Recommended Pacing

8 weeks

## Standards

| **2020 New Jersey Student Learning Standards – Career & Technical Education (CTE)** | |
|---|---|
| 9.3.12.AC.1 | Use vocabulary, symbols and formulas common to architecture and construction. |
| 9.3.12.AC.6 | Read, interpret and use technical drawings, documents and specifications to plan a project. |
| 9.3.12.AC-DES.2 | Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues. |
| 9.3.12.AC-DES.6 | Apply the techniques and skills of modern drafting, design, engineering and construction to projects. |
| 9.3.MN-QA.7 | Identify inspection processes that ensure products meet quality specifications. |
| **2020 New Jersey Student Learning Standards – Career Readiness, Life Literacies, and Key Skills** | |
| 9.4.12.CI.1 | Demonstrate the ability to reflect, analyze, and use creative skills and ideas |
| 9.4.12.CI.2 | Identify career pathways that highlight personal talents, skills, and abilities |
| 9.4.12.CI.3 | Investigate new challenges and opportunities for personal growth, advancement, and transition |

| **2020 New Jersey Student Learning Standards – Computer Science and Design Thinking** | |
|---|---|
| 8.2.12.ED.2 | Create scaled engineering drawings for a new product or system and make modifications to increase optimization based on feedback. |
| 8.2.12.ED.5 | Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics). |
| **New Jersey Student Learning Standards for Mathematics** | |
| G.MG.1 - Modeling with Geometry | Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). |
| N.Q.1 - Quantities | Use units as a way to understand problems and to guide the solution of multi step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. |
| N.Q.3 - Quantities | Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. |

## Instructional Focus

| **Enduring Understandings:** | **Essential Questions:** |
|---|---|
| ● Students will understand the history of measurements.<br>● Students will understand dating back beyond the Roman Empire, the need to know how far, how long, how deep and how much something could hold was information people needed to accomplish many tasks.<br>● Students will understand throughout time, people created and improved on the methods and tools used to measure, making them more and more exact.<br>● Students will understand precision and consistency are essential to the process of manufacturing. | ● What is measurement?<br>● What is a measurement system?<br>● How many systems of measurement are there<br>● What do measurement tools look like and how are they used?<br>● What role does measurement have in manufacturing?<br>● Is the metric system better than the imperial system? |

**Evidence of Learning (Assessments)**

Formative, Summative and Authentic Assessments:

- Capstone Drawings (Lettering Assessment, ILCD, Base Plate, Adjusting Arm, Key Plate, Template)
- Tool Quiz
- Measurement Quiz

**Objectives (SLO)**

| Students will know: | Students will be able to: |
| --- | --- |
| ● How to measure<br>● How to select the appropriate tool for the task<br>● The appropriate use of different weight pencils<br>● Line format<br>● Lettering<br>● How to solve problems logically<br>● How to self evaluate<br>● How to appropriately manage time<br>● That all measurements are an approximation of the true value of a quantity. | ● Use a drafting scale to 1/16” tolerance<br>● Use a protractor to ½ degree tolerance<br>● Use 30-60-90 and 45-90 triangles<br>● Use a compass<br>● Use a t-square<br>● Use a two stage pencil sharpening system<br>● Setup a workspace and layout a titlebox<br>● Create single view drawings<br>● Complete a rubric<br>● Follow a procedural calendar to stay on task and track their progress. |

## Suggested Resources/Technology Tools

- Schoology
- GoogleSheets
- GoogleDocs
- GoogleSlides
- Chromebooks

## Tier 1 Modifications and Accommodations

*Including special education students, Multilingual Language Learners (MLLs), students at risk of school failure, gifted and talented students, and students with 504 plans*

Special Education/IEP/504 - Modifications and accommodations must be aligned to the stated plan and uphold expectations of the plan lawfully. Every student requires a different set of accommodations based upon need. Examples specific to visual arts practice include, but are not limited to:

- Follow individual IEP/504 plans for specific modifications.
- Preferential seating
- Extended/Additional time for assessments
- Behavior management support
- Assignments/resources in electronic and physical format
- Break down assignments with oral directions, written directions, and visuals.
- Provide frequent reminders to stay on task and reinforce on-task behavior
- Work on organizational skills
- Provide visual supports
- Partnering/Grouping of students
- Re-teaching and review
- Multi-media approach to accommodate various learning styles
- Decrease/Modify number of project requirements
- Teacher/Aide/Para assistance
- Demonstrations of techniques on an individual level
- Show slide presentations to encourage exploration of project ideas

MLL - Teachers identify the modifications that they will use in the unit as related to the needs of their student

population. Examples specific to visual arts practice include, but are not limited to:

- Allow the use of Google Translate where appropriate.
- Provide alternate ways for the student to respond (verbal/pictographic answers instead of written)
- Substitute a hands-on activity or use of different media in projects for a written activity
- Prepare and distribute advance notes
- Provide model sentence frames and sentence starters for both oral responses and written responses
- Provide additional time to complete assessments and assignments
- Model and use gestures to aid in understanding
- Model tasks by giving one or two examples before releasing students to work independently
- Present instructions both verbally and visually
- Simplify written and verbal instructions
- Speak clearly and naturally, and try to enunciate words, especially their ending sounds.
- Provide Visual, Graphic, Interactive, and/or Sensory Supports
- Simplify the language, format, and directions of the assessment
- Allow for alternate seating for proximity to peer helper or teacher as necessary
- When showing videos, use Closed Captioning.
- Support use of student's primary language by translating key words in directions, or key vocabulary terms or giving students opportunities to communicate in their primary language (written or orally).

Gifted and Talented/Enrichment - Utilize differentiation in the areas of acceleration, enrichment, and grouping. Examples specific to visual arts practice include, but are not limited to:

- Complex, in-depth research assignments
- Independent study where applicable
- Provide a variety of individualized work centers or student choice
- Lead demonstrations for class
- Individual presentation

## Career Readiness, Life Literacies, and Key Skills Practices (June 2020)

- ❑ Act as a responsible and contributing citizen and employee.
- ❑ Apply appropriate academic and technical skills.
- ❑ Attend to personal health and financial well being.
- ❑ Communicate clearly and effectively and with reason.
- ❑ Consider the environmental, social and economic impacts of decisions.
- ❑ Demonstrate creativity and innovation.
- ❑ Employ valid and reliable research strategies.
- ❑ Utilize critical thinking to make sense of problems and persevere in solving them.
- ❑ Model integrity, ethical leadership, and effective management.
- ❑ Plan education and career paths aligned to personal goals.
- ❑ Use technology to enhance productivity.
- ❑ Work productively in teams while using cultural global competence.

*LINKS TO CAREERS:*

- Field Trips -
  - CAD Design Firm, Manufacturing company
- Potential Guest Speakers -
  - CAD Drafter, Architect, Product Designer, Manufacturer

# Unit 2

## Geometry of Drafting

## Summary and Rationale

Engineers, architects, designers, and drafters regularly apply the principles of geometry to the solutions of technical problems. Much of the work done in the drafting room is based on geometric constructions and every person engaged in technical work should be familiar with solutions to common problems in this area. Methods of problem solving presented in this chapter are based on the principles of plane geometry. Accuracy is very important in drawing geometric constructions because a slight error in laying out a problem could result in costly errors in the final solution.

## Recommended Pacing

12 weeks

## Standards

| **2020 New Jersey Student Learning Standards – Career & Technical Education (CTE)** | |
|---|---|
| 9.3.12.AC.1 | Use vocabulary, symbols and formulas common to architecture and construction. |
| 9.3.12.AC.6 | Read, interpret and use technical drawings, documents and specifications to plan a project. |
| 9.3.12.AC-DES.2 | Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues. |
| 9.3.12.AC-DES.6 | Apply the techniques and skills of modern drafting, design, engineering and construction to projects. |
| 9.3.MN-QA.7 | Identify inspection processes that ensure products meet quality specifications. |
| **2020 New Jersey Student Learning Standards – Career Readiness, Life Literacies, and Key Skills** | |
| 9.4.12.CI.1 | Demonstrate the ability to reflect, analyze, and use creative skills and ideas |
| 9.4.12.CI.2 | Identify career pathways that highlight personal talents, skills, and abilities |

| | |
|---|---|
| 9.4.12.CI.3 | Investigate new challenges and opportunities for personal growth, advancement, and transition. |
| **2020 New Jersey Student Learning Standards – Computer Science and Design Thinking** | |
| 8.2.12.ED.2 | Create scaled engineering drawings for a new product or system and make modifications to increase optimization based on feedback. |
| 8.2.12.ED.5 | Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics). |
| **New Jersey Student Learning Standards for Mathematics** | |
| G.MG.1 - Modeling with Geometry | Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). |
| N.Q.1 - Quantities | Use units as a way to understand problems and to guide the solution of multi step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. |
| N.Q.3 - Quantities | Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. |
| Interdisciplinary Connections | |
| New Jersey Student Learning Standards for English Language Arts | |
| SL9-10.1. - Speaking and Listening | Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with peers on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. |

## Instructional Focus

| **Enduring Understandings:** | **Essential Questions:** |
|---|---|
| ● The understanding of geometry can unlock solutions to almost any problem imaginable. | ● How do principles of math and science help an individual problem solve questions?<br>● In what ways can you utilize this process in your own life? |
| **Evidence of Learning (Assessments)** | |

Formative, Summative and Authentic Assessments:

- Capstone project (Micro Drawings: 1, 2, 4, 5, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28; Conveyor Link, Cover Plate, Gasket, Keyhole Saw Handle, Elliptical Cam, Movie Film Reel, Buick Rear Transmission Gasket)
- Demonstration/Oral Presentation of Micro Drawing

**Objectives (SLO)**

| Students will know: | Students will be able to: |
|---|---|
| ● Geometry applies to the creation of all drawings and objects | ● Bisect/cut into multiple equal pieces: lines and angles<br>● Copy angles<br>● Circumscribe: square, hexagon, octagon<br>● Inscribe: square, pentagon, hexagon, octagon<br>● Create tangencies: arc to two lines (acute, obtuse, and 90* angles), arc to line and an arc, arc to two arcs, line to two arcs, line to a point and an arc. |

## Suggested Resources/Technology Tools

- Schoology
- GoogleSheets
- GoogleDocs
- GoogleSlides
- Chromebooks

## Tier 1 Modifications and Accommodations

*Including special education students, Multilingual Language Learners (MLLs), students at risk of school failure, gifted and talented students, and students with 504 plans*

Special Education/IEP/504 - Modifications and accommodations must be aligned to the stated plan and uphold expectations of the plan lawfully. Every student requires a different set of accommodations based upon need. Examples specific to visual arts practice include, but are not limited to:

- Follow individual IEP/504 plans for specific modifications.
- Preferential seating
- Extended/Additional time for assessments
- Behavior management support
- Assignments/resources in electronic and physical format
- Break down assignments with oral directions, written directions, and visuals.
- Provide frequent reminders to stay on task and reinforce on-task behavior
- Work on organizational skills
- Provide visual supports
- Partnering/Grouping of students
- Re-teaching and review
- Multi-media approach to accommodate various learning styles
- Decrease/Modify number of project requirements
- Teacher/Aide/Para assistance
- Demonstrations of techniques on an individual level
- Show slide presentations to encourage exploration of project ideas

MLL - Teachers identify the modifications that they will use in the unit as related to the needs of their student population. Examples specific to visual arts practice include, but are not limited to:

- Allow the use of Google Translate where appropriate.
- Provide alternate ways for the student to respond (verbal/pictographic answers instead of written)
- Substitute a hands-on activity or use of different media in projects for a written activity
- Prepare and distribute advance notes
- Provide model sentence frames and sentence starters for both oral responses and written responses
- Provide additional time to complete assessments and assignments
- Model and use gestures to aid in understanding
- Model tasks by giving one or two examples before releasing students to work independently
- Present instructions both verbally and visually
- Simplify written and verbal instructions
- Speak clearly and naturally, and try to enunciate words, especially their ending sounds.
- Provide Visual, Graphic, Interactive, and/or Sensory Supports
- Simplify the language, format, and directions of the assessment
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- Support use of student's primary language by translating key words in directions, or key vocabulary terms or giving students opportunities to communicate in their primary language (written or orally).

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- Complex, in-depth research assignments
- Independent study where applicable
- Provide a variety of individualized work centers or student choice
- Lead demonstrations for class
- Individual presentation

## Career Readiness, Life Literacies, and Key Skills Practices (June 2020)

- ❑ Act as a responsible and contributing citizen and employee.
- ❑ Apply appropriate academic and technical skills.
- ❑ Attend to personal health and financial well being.
- ❑ Communicate clearly and effectively and with reason.
- ❑ Consider the environmental, social and economic impacts of decisions.
- ❑ Demonstrate creativity and innovation.
- ❑ Employ valid and reliable research strategies.
- ❑ Utilize critical thinking to make sense of problems and persevere in solving them.
- ❑ Model integrity, ethical leadership, and effective management.
- ❑ Plan education and career paths aligned to personal goals.
- ❑ Use technology to enhance productivity.
- ❑ Work productively in teams while using cultural global competence.

*LINKS TO CAREERS:*

- Field Trips -
  - CAD Design Firm, Manufacturing company
- Potential Guest Speakers -

- CAD Drafter, Architect, Product Designer, Manufacturer

# Unit 3

## AutoCAD

## Summary and Rationale

AutoCAD is a commercial software application used to draft 2 and 3 dimensional models with the aid of a computer. With adequate knowledge of AutoCAD, anyone can take on projects that consist of designing architectural plans for construction purposes or building structures to be replicated in real-time. The use of a computer aided design application is recommended when there is a need to create drawings faster while minimizing human errors by providing professionals niches with unique drafting tools that can be used to bring their engineering ideas to life with the accuracy they require.

## Recommended Pacing

10 weeks

## Standards

| | |
|---|---|
| **2020 New Jersey Student Learning Standards – Career & Technical Education (CTE)** | |
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| 9.3.12.AC.6 | Read, interpret and use technical drawings, documents and specifications to plan a project. |
| 9.3.12.AC-DES.2 | Use effective communication skills and strategies (listening, speaking, reading, writing and graphic communications) to work with clients and colleagues. |
| 9.3.12.AC-DES.6 | Apply the techniques and skills of modern drafting, design, engineering and construction to projects. |
| 9.3.MN-QA.7 | Identify inspection processes that ensure products meet quality specifications. |
| **2020 New Jersey Student Learning Standards – Career Readiness, Life Literacies, and Key Skills** | |
| 9.4.12.CI.1 | Demonstrate the ability to reflect, analyze, and use creative skills and ideas |
| 9.4.12.CI.2 | Identify career pathways that highlight personal talents, skills, and abilities |

| | |
|---|---|
| 9.4.12.CI.3 | Investigate new challenges and opportunities for personal growth, advancement, and transition. |
| **2020 New Jersey Student Learning Standards – Computer Science and Design Thinking** | |
| 8.2.12.ED.2 | Create scaled engineering drawings for a new product or system and make modifications to increase optimization based on feedback. |
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| **New Jersey Student Learning Standards for Mathematics** | |
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| N.Q.1 - Quantities | Use units as a way to understand problems and to guide the solution of multi step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. |
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## Instructional Focus

| **Enduring Understandings:** | **Essential Questions:** |
|---|---|
| ● Students will understand how solid modeling software has changed the design world.<br>● Students will understand communication is important for engineers. | ● Who uses CAD?<br>● What are the advantages of a CAD system over hand drawings?<br>● What role does CAD play in a society?<br>● How has technology changed the development of products? |

**Evidence of Learning (Assessments)**

Formative, Summative and Authentic Assessments:

- Capstone Drawings/Files (Titlebox Template, ILCD, Base Plate, Adjusting Arm, Key Plate, Template, Clock, Conveyor Link, Cover Plate, Gasket, Keyhole Saw Handle, Elliptical Cam, Movie Film Reel, BRTG)
- Final

**Objectives (SLO)**

| Students will know: | Students will be able to: |
| --- | --- |
| ● The primary function tools of AutoCAD programs<br>● How to solve problems logically<br>● How to self evaluate<br>● How to appropriately manage time<br>● Appropriate and sufficient annotation (including dimensioning) to a drawing to fully describe an object.<br>● How to create technical drawings using 3D computer-aided design (CAD) software to document a design according to standard engineering practices. | ● Create a network folder<br>● Create, open, save, and save as work<br>● Use draw and modify tools: line, circle, text, move, rotate, trim, extend, offset, copy, erase, mirror<br>● Setup a workspace and layout a titlebox<br>● Create single view drawings<br>● Create and format dimensions: linear, angular dimension, radii, diameter; dimension styles, dimension properties; placement and orientation, lineweight<br>● Setup appropriate printer specifications<br>● Build a 3D computer model to represent a physical object.<br>● Complete a rubric<br>● Follow a procedural calendar to stay on task and track their progress. |

## Suggested Resources/Technology Tools

- Schoology
- GoogleSheets
- GoogleDocs
- GoogleSlides
- Autodesk AutoCAD
- Autodesk Fusion 360
- OnShape
- Chromebooks

## Tier 1 Modifications and Accommodations

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## Career Readiness, Life Literacies, and Key Skills Practices (June 2020)

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- ❑ Consider the environmental, social and economic impacts of decisions.
- ❑ Demonstrate creativity and innovation.
- ❑ Employ valid and reliable research strategies.
- ❑ Utilize critical thinking to make sense of problems and persevere in solving them.
- ❑ Model integrity, ethical leadership, and effective management.
- ❑ Plan education and career paths aligned to personal goals.
- ❑ Use technology to enhance productivity.
- ❑ Work productively in teams while using cultural global competence.

*LINKS TO CAREERS:*

- Field Trips -
    - CAD Design Firm, Manufacturing company
- Potential Guest Speakers -
    - CAD Drafter, Architect, Product Designer, Manufacturer

# Unit 4

## Orthographic Projection

## Summary and Rationale

With multiview orthographic projections, up to six pictures of an object are produced, with each projection plane parallel to one of the coordinate axes of the object. The views are positioned relative to each other according to either of two schemes: first-angle or third-angle projection. In each, the appearances of views may be thought of as being projected onto planes that form a 6-sided box around the object. Although six different sides can be drawn (top,bottom, front, back, left side, and right side) usually three views of a drawing give enough information to make a 3D object.

## Recommended Pacing

10 weeks

## Standards

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| | |
|---|---|
| 9.4.12.CI.3 | Investigate new challenges and opportunities for personal growth, advancement, and transition. |
| **2020 New Jersey Student Learning Standards – Computer Science and Design Thinking** | |
| 8.2.12.ED.2 | Create scaled engineering drawings for a new product or system and make modifications to increase optimization based on feedback. |
| 8.2.12.ED.5 | Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics). |
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| N.Q.1 - Quantities | Use units as a way to understand problems and to guide the solution of multi step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. |
| N.Q.3 - Quantities | Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. |

## Instructional Focus

| **Enduring Understandings:** | **Essential Questions:** |
|---|---|
| ● A single view representation is not always sufficient to understanding an object.<br>● Scale and perception affect a client's understanding of a product. | ● What is Orthographic Projection?<br>● What is the difference between a sketch and a working drawing?<br>● Why is it important to consider the relationship of height and width when creating a sketch or drawing?<br>● How is orthographic projection used in design and communication technology and why is it important?<br>● Why is it important to understand isometric drawing?<br>● How can the use of multiple views convey an object? |

**Evidence of Learning (Assessments)**

Formative, Summative and Authentic Assessments:

- Capstone Drawings (Fig. 7.27 [1-12], Fig. 7.28 [1-20], Fig. 7.29 [1-15], Fig. 7.30 [1-15])

**Objectives (SLO)**

| Students will know: | Students will be able to: |
| --- | --- |
| ● Different forms of models can be used to represent an idea.<br>● The 6 primary views of any object.<br>● How to identify errors and omissions in orthographic projections and multiview drawings.<br>● Necessary/appropriate views to fully detail a part or assembly.<br>● Appropriate and sufficient annotation (including dimensioning) to a drawing to fully describe an object.<br>● How to create technical drawings using 3D computer-aided design (CAD) software to document a design according to standard engineering practices. | ● Hand sketch isometric views of a simple object or part at a given scale using the actual object, a detailed verbal description of the object, or a pictorial view of the object.<br>● Hand sketch an isometric view or build a physical representation of an object based on a multiview drawing of the object.<br>● Identify three-dimensional objects generated by rotation of a two-dimensional object. |

## Suggested Resources/Technology Tools

- Schoology
- GoogleSheets
- GoogleDocs
- GoogleSlides
- Autodesk AutoCAD
- Autodesk Fusion 360
- OnShape
- Chromebooks

## Tier 1 Modifications and Accommodations

*Including special education students, Multilingual Language Learners (MLLs), students at risk of school failure, gifted and talented students, and students with 504 plans*

Special Education/IEP/504 - Modifications and accommodations must be aligned to the stated plan and uphold expectations of the plan lawfully. Every student requires a different set of accommodations based upon need. Examples specific to visual arts practice include, but are not limited to:

- Follow individual IEP/504 plans for specific modifications.
- Preferential seating
- Extended/Additional time for assessments
- Behavior management support
- Assignments/resources in electronic and physical format
- Break down assignments with oral directions, written directions, and visuals.
- Provide frequent reminders to stay on task and reinforce on-task behavior
- Work on organizational skills
- Provide visual supports
- Partnering/Grouping of students
- Re-teaching and review
- Multi-media approach to accommodate various learning styles
- Decrease/Modify number of project requirements

- Teacher/Aide/Para assistance
- Demonstrations of techniques on an individual level
- Show slide presentations to encourage exploration of project ideas

MLL - Teachers identify the modifications that they will use in the unit as related to the needs of their student population. Examples specific to visual arts practice include, but are not limited to:

- Allow the use of Google Translate where appropriate.
- Provide alternate ways for the student to respond (verbal/pictographic answers instead of written)
- Substitute a hands-on activity or use of different media in projects for a written activity
- Prepare and distribute advance notes
- Provide model sentence frames and sentence starters for both oral responses and written responses
- Provide additional time to complete assessments and assignments
- Model and use gestures to aid in understanding
- Model tasks by giving one or two examples before releasing students to work independently
- Present instructions both verbally and visually
- Simplify written and verbal instructions
- Speak clearly and naturally, and try to enunciate words, especially their ending sounds.
- Provide Visual, Graphic, Interactive, and/or Sensory Supports
- Simplify the language, format, and directions of the assessment
- Allow for alternate seating for proximity to peer helper or teacher as necessary
- When showing videos, use Closed Captioning.
- Support use of student's primary language by translating key words in directions, or key vocabulary terms or giving students opportunities to communicate in their primary language (written or orally).

Gifted and Talented/Enrichment - Utilize differentiation in the areas of acceleration, enrichment, and grouping. Examples specific to visual arts practice include, but are not limited to:

- Complex, in-depth research assignments
- Independent study where applicable
- Provide a variety of individualized work centers or student choice
- Lead demonstrations for class
- Individual presentation

## Career Readiness, Life Literacies, and Key Skills Practices (June 2020)

- ❑ Act as a responsible and contributing citizen and employee.
- ❑ Apply appropriate academic and technical skills.
- ❑ Attend to personal health and financial well being.
- ❑ Communicate clearly and effectively and with reason.
- ❑ Consider the environmental, social and economic impacts of decisions.
- ❑ Demonstrate creativity and innovation.
- ❑ Employ valid and reliable research strategies.
- ❑ Utilize critical thinking to make sense of problems and persevere in solving them.
- ❑ Model integrity, ethical leadership, and effective management.
- ❑ Plan education and career paths aligned to personal goals.
- ❑ Use technology to enhance productivity.
- ❑ Work productively in teams while using cultural global competence.

*LINKS TO CAREERS:*

- Field Trips -
    - CAD Design Firm, Manufacturing company
- Potential Guest Speakers -
    - CAD Drafter, Architect, Product Designer, Manufacturer