Grade, Subject/Course: CADD 9-12	
Unit: Introduction to Visual Communication	**__X__ Essential _____ Important _____ Compact**
Big Idea: Sketching and geometric construction are the foundation of all engineering graphics. Whether drawing a two-dimensional engineering drawing or creating a three-dimensional model, CADD technicians must have a strong understanding of sketching and geometric construction.	
STEELS/Tech and Engineering Strand: 3.5.9-12.A Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process. 3.5.9-12.PP Demonstrate the use of conceptual, graphical, virtual, mathematical, and physical modeling to identify conflicting considerations before the entire system is developed and to aid in design decision making.	**Pacing:** 1-2 Weeks
Essential Questions: UEQ: Why is visual communication the best way to communicate a 3D object? LEQ: What are the four types of lines we use in technical sketching? LEQ: What is the best way to form a straight line when sketching? LEQ: What is the difference between technical sketching and an artistic sketch? LEQ: What are pictorial sketching techniques? LEQ: What standard dimensions are communicated 2D, Oblique, and Isometric sketches?	**Understandings:** Students will know that… ● Understand why visual communication is the only way to communicate a 3D object. ● Understand the difference between technical sketching and other methods of sketching such as artistic sketching. ● Understand that technical sketching is used as a communication tool and not an artistic expression ● Understand that technical sketching is a skill that can be learned and improved with practice ● The four common types of lines used in visual communication ● Several different pictorial sketching techniques and where they are best utilized. ● The standard dimensions contained different sketching techniques.

Knowledge: Technical Sketching, Technical Sketching Techniques, 2D sketching, 3D sketching, Perspective Sketching, Isometric Sketching	**Do/Skills:** Students will be able to… ● Sketch a straight line, arc, ellipse, and circular elements by utilizing freehand technical sketching methods. ● Properly sketch a title block ● Sketch basic shapes and 3d shapes using technical sketching methods ● Utilize various line types when creating technical sketches. ● Create pictorial images through the use of technical sketching methods. ● Create thumbnail sketches for product design ● Communicate visually through technical sketching methods. ● Setup and create perspective technical sketches
Vocabulary: Freehand, Sketching, Drawing, Construction Line, Hidden Line, Object Line, Center Line, Oblique Pictorial, Isometric Pictorial, Wireframe Pictorial, Perspective Pictorial, Pictorial, Title Block	**Core Resources:** ● AutoCAD ● PC Lab Capable of running software ● Teacher created videos, and demonstrations
Common Assessment(s): 1. Tech Sketch 1 2. Tech Sketch 2 3. Perspective Sketch 4. Isometric Sketching	**Supplemental Resources:**

Grade, Subject/Course: CADD 9-12	
Unit: Multiview Drawings	**__X__ Essential _____ Important _____ Compact**
Big Idea: The ability to create and interpret 3-D images and to be able to break those 3-D images into a multiview drawing is critical and foundational for all engineering graphics	
STEELS/Tech and Engineering Strand: 3.5.9-12.A Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process. 3.5.9-12.PP Demonstrate the use of conceptual, graphical, virtual, mathematical, and physical modeling to identify conflicting considerations before the entire system is developed and to aid in design decision making.	**Pacing:** 1-2 weeks
Essential Questions: UEQ: What is an orthographic projection? LEQ: How is orthographic projection used to communicate a 3D part? LEQ: How many views are possible with any 3D object? LEQ: What are the three standard views used to communicate a 3D object? LEQ: What dimensions are contained in each view? LEQ: Which view is selected as the front view of an object? LEQ: What objects require more than three views? LEQ: What 3D objects require less than 3 views? LEQ: What is the miter line used for in an orthographic layout? LEQ: What is the standard spacing between views? LEQ: What is a thumbnail sketch and how is it used to communicate an idea?	**Understandings:** Students will know that… ● Understand how multiview drawings/Orthographic projection are used to communicate the descriptive qualities of a part or product. ● Understand the purpose of the miter line used in an orthographic layout. ● The three standard views used in a multiview layout. ● The proper multiview layout techniques. ● A thumbnail sketch and how it is used to communicate visual design quickly.

Knowledge: Orthographic projection, Drawing layout, Identification of Views	**Do/Skills:** Students will be able to… ● Select and designate the proper view for the front view when presented with a 3D object. ● Be able to setup a multiview drawing with the views in the proper location and order ● Setup multiview drawings with proper spacing between views and construct a proper miter line ● Be able to select the appropriate number of views to communicate a 3D ● Be able to take an Isometric representation of an object and break it into the multiview projections
Vocabulary: Front View, Top View, Right side, Width, Height, Depth, Miter Line, Projection Line, Orthographic Projection, Miter, Spacing, Dimension, Line	**Core Resources:** ● AutoCAD ● PC Lab Capable of running software ● Teacher created videos, and demonstrations
Common Assessment(s): 1. Orthographic Sketching 2. Product Ideation 3. Product Design	**Supplemental Resources:**

Grade, Subject/Course: CADD 9-12	
Unit: CADD Sketching and Features	**__X__ Essential _____ Important _____ Compact**
Big Idea: The ability of a CADD technician to work quickly and efficiently within a CADD program is critical to maximizing the productivity of a technician. In order to do that, students must have a strong foundation of the usage of sketching and extrusion tools.	
STEELS/Tech and Engineering Strand: 3.5.9-12.A Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process.	**Pacing:** 3 Weeks
Essential Questions: UEQ: How is CADD used to communicate a 3D object in a 2D environment? LEQ: When creating a drawing in CADD where do you start? LEQ: What tools are used to create line features in a CADD? LEQ: What tools can be used to create an arc feature in CADD? LEQ: What tools are used to create circular features in CADD? LEQ: What is the difference between a diameter and a radius? LEQ: Where are diameters used vs radius? LEQ: What tools can be used to create patterns in a sketch? LEQ: What is the difference between a fillet and a chamfer? LEQ: What is a tangent? LEQ: What reference geometry can be included in a sketch? LEQ: What is a fully defined sketch? LEQ: How does CADD display an error in a sketch?	**Understandings:** Students will know that… ● Understand the importance of CADD in product design and manufacturing ● Common starting locations for creating a drawing in CADD. ● Understand that entities such as but not limited to line, arc, circle, fillet, and chamfer require different tools. ● Understand that each of the tools in CADD require knowledge and skill to be used appropriately. ● Utilize the tangent tool when connecting lines to arcs ● Be able to reference in a defined space a drawing correctly. ● Be able to provide enough dimensions to fully define a drawing ● Recognize how errors in a sketch and how to remedy them. ● It takes logic in order to properly apply geometric constraints
Knowledge: CADD sketching techniques, CADD sketching tools, geometric constraints, geometric terms, problem solving	**Do/Skills:** Students will be able to… ● Use CADD to represent a 3D design ● Properly start a CADD drawing in the origin ● Select the proper starting location for creating a drawing in CADD. ● Be able to create straight line features using a variety of tools. ● Be able to create arc features using a variety of tools. ● Be able to create circular features using a variety of tools. ● Be able to create linear and circular patterns ● Be able to create fillets and chamfers appropriately ● Utilize the tangent tool when connecting lines to arcs

	● Be able to reference in a defined space a drawing correctly. ● Be able to provide enough dimensions to fully define a drawing ● Recognize how errors in a sketch and how to remedy them ● Differentiate between a diameter and a radius. ● Utilize diameter and radius correctly in a drawing
Vocabulary: Origin, Sketch, Plane, Reference plane, Geometry, Constraint, Angle, Angular Bisector, Midpoint, Arc, Center Point Arc, 3 Point, Arc, Diameter, Radius, Dimension Line, Extension Line, Leading, Line Angular Bisector, Coincident, Concentric, Horizontal, Midpoint Perpendicular, Parallel, Symmetric, Tangent, Vertical,	**Core Resources:** ● AutoCAD ● PC Lab Capable of running software ● Teacher created videos, and demonstrations
Common Assessment(s): 1. CADD Sketching Assignments 2. Cadd Extrusion Assignments 3. Content Knowledge Checks	**Supplemental Resources:** ● **https://learn.onshape.com/** ● ITEEA Onshape by Design ● YouTube

Grade, Subject/Course: CADD 9-12	
Unit: Modeling and Features	**__X__ Essential _____ Important _____ Compact**
Big Idea: Three-dimensional models are used for rapid prototyping (3D printing), and computer numerical control (CNC) manufacturing processes. In CADD systems extruding is the process of creating a solid three-dimensional object from a two-dimensional sketch. Extrusion is necessary in order to create a three-dimensional model.	
STEELS/Tech and Engineering Strand: 3.5.9-12.A Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process.	**Pacing:** 3 Weeks
Essential Questions: UEQ: How is CADD software used to model parts? LEQ How is a profile made into a basic 3D object? LEQ: How can the extrude tool be modified to perform different functions? LEQ: How is an End Condition selected for an Extrude? LEQ: What does symmetric mean when extruding? LEQ: What is draft and how is draft created with an extrude? LEQ What is the difference between a surface and a region? LEQ: How are drawings properly dimensions? LEQ: How do you add additional planes? LEQ: What information do you need to add a plane? LEQ: What is a revolve? LEQ:What are the two elements that you need to revolve a sketch? LEQ: How are variables used in CAD? LEQ: What is a shell feature? LEQ: What is a rib feature?	**Understandings:** Students will know that… ● All extruded parts have a user defined end condition and that end condition varies according to the needs of the part and the design of the part file ● Surfaces and regions can be extruded but they make vastly different parts ● Draft is applying a positive or negative angle on an extruded part or parts ● In order to communicate the part effectively the part drawings must contain dimensions that are clear, concise, and accurately describe the part ● Sketches can only be created on a surface or a plane and planes must be added for complex drawings ● A revolve is rotational extrusion of a sketch that is defined by the user ● The elements needed to create complex extrudes such as revolves, sweeps, and lofts. ● The only way to make a part 3D is to create a sketch and then extrude it. ● Extrusions are throughout and purposefully defined so that the generated par matches the given specifications and it is done as efficiently as possible ● Properly dimensioned parts communicate the design intent, dimensions that are incorrect do not communicate the correct information and are worthless. ● Complex parts often require the user to add in new planes to create sketches ● In order to add a plane the reference geometry must be known for the missing parameters. ● Some parts will require complex extrudes such as revolves, sweeps, and lofts in order to be modeled correctly.

Knowledge: Solid modeling techniques, tools, & procedures, Filets and Chamfers, Shelling out a part	**Do/Skills:** Students will be able to… ● Create 3D representations of parts by selecting the proper region and extruding it to the known dimensions and the most efficient way possible ● Properly modify an extrusion to have the proper end condition, draft, and central tendency. ● Apply a draft to an extruded part. ● Dimension a drawing correctly to communicate all needed information in a way that is the most efficient and clear. ● Add addition planes to create sketches needed to model a part ● Create complex extrudes, revolves, sweeps, and lofts ● Utilize geometric constraints and advanced sketching tools to create complex parts and patterns ● Create a sketched perimeter as well as a defined region.
Vocabulary: Extrude, New, Add, Remove, Intersect, Revolve, Sweep, Loft, Plane, Draft, Computer Numerical Control (CNC), Rapid Prototyping, (3DPrinting), Center point arc, Mirror, Offset, Point, Polygon, Sketch, Filet, Spline, Tangent arc, Three-point arc, Use, Chamfer, Fillet, Shell, Coincident, Concentric, Horizontal, Midpoint, Perpendicular, Parallel, Revisions, Symmetric, Tangent, Variable,	**Core Resources:** ● Fusion 360, Revit, & Onshape ● PC Lab Capable of running software ● Teacher created videos, and demonstrations
Common Assessment(s): 1. Revolve activities & assignments 2. Sweep activities & assignments 3. Shell activities & assignments 4. Variable activities & assignments 5. Puzzle cube	**Supplemental Resources:** ● **https://learn.onshape.com/** ● ITEEA Onshape by Design

Grade, Subject/Course: CADD 9-12	
Unit: Assemblies	**__X__ Essential _____ Important _____ Compact**
Big Idea: Creating assemblies of three dimensional models is necessary to check for design problems that can be costly for product developers. CADD technicians can check for alignment of components, fit, interference, and many other design parameters for a particular mechanism.	
STEELS/Tech and Engineering Strand: 3.5.9-12.A Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process. 3.5.9-12.OO Use project management tools, strategies, and processes in planning, organizing, and controlling work. 3.5.9-12.PP Demonstrate the use of conceptual, graphical, virtual, mathematical, and physical modeling to identify conflicting considerations before the entire system is developed and to aid in design decision making.	**Pacing:** 2 weeks
Essential Questions: UEQ: What does it take to properly assembly parts in CADD? LEQ: Why are CADD assemblies created before parts are manufactured? LEQ:What are the methods for inserting parts into an assembly? LEQ: What does the term fixed mean in an assembly? LEQ: What are mates and mate connectors? LEQ: What are the different relationships that can be used with a mate? LEQ: How can assembly relationships be modified to better meet the design intent? LEQ: How is standard content into an assembly? LEQ:What are the different standards (ANSI, ISO, DIN) used for content in assemblies?	**Understandings:** Students will know that… ● Assemblies are crucial for detecting potential design problems before physical manufacturing begins. ● Creating assemblies early in the design process can save time and resources by preventing costly errors during production. ● Understand the importance of defining relationships (e.g., fixed, aligned, concentric) between custom models to prevent conflicts during assembly. ● There are benefits of using standard components to ensure consistency and adherence to design norms in product assemblies. ● Cadd workers can collaborate within CADD environments by sharing models, assemblies, and standard content, ensuring smooth workflows in a team setting.

Knowledge: Assemblies, Inserting Content, Standard Content, Mates, Mate Connectors, Mate Relationships, Limits, Offset,	**Do/Skills:** Students will be able to… ● Import or create custom models (e.g., parts, components) and insert them into an assembly in CADD software. ● Use various methods for inserting models into assemblies, such as using parametric links, direct insertion from part libraries, and importing models from external files. ● Decide which insertion method is best suited to different assembly contexts, considering factors like flexibility, file size, and model dependencies. ● Utilize advanced skills in CADD software, focusing on assembly creation, model insertion, and standard content integration. ● Learn to organize and navigate part libraries, including the process of searching for, selecting, and inserting standard parts into assemblies. ● Troubleshoot issues related to part fitting, missing constraints, and part misalignment when working within assemblies.
Vocabulary: Assembly, Mates, Mate Connector, Standard Content, Limits, Solving, ANSI, Third-Angle Projection, Auxiliary View, Detail View, Break View, Broken Out Section View, Section View, Isometric View, Assembly, Drawing, Exploded View	**Core Resources:** ● Fusion 360, Revit, & Onshape ● PC Lab Capable of running software ● Teacher created videos, and demonstrations
Common Assessment(s): 1. Assembly activities & assignments 2. Arbor Press activities & assignments 3. Inserting standard content activities & assignments	**Supplemental Resources:** ● **https://learn.onshape.com/** ● ITEEA Onshape by Design ● YouTube

Grade, Subject/Course: CADD 9-12	
Unit: Engineering Drawings	**__X__ Essential _____ Important _____ Compact**
Big Idea: Accurately reading and interpreting engineering drawings is a vital skill that all CADD technicians and many other industry professionals need to possess.	
STEELS/Tech and Engineering Strand: 3.5.9-12.A Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process. 3.5.9-12.OO Use project management tools, strategies, and processes in planning, organizing, and controlling work.	**Pacing:** 1 weeks
Essential Questions: UEQ: Why is reading and interpreting engineering drawings an essential skill for CADD technicians and other tradespeople? LEQ: What role does understanding engineering drawings play in communication between design teams, manufacturers, and other professionals? LEQ: What are the key elements and symbols you need to understand when interpreting a two-dimensional engineering drawing? LEQ: What information is contained in the title block of a drawing? LEQ: What information can different views convey in engineering drawings? LEQ: How does the choice of view projection affect the clarity and precision of the drawing in conveying design intent?	**Understandings:** Students will know that… ● Engineering drawings serve as a universal language between designers, engineers, manufacturers, and technicians. ● The ability to interpret engineering drawings ensures the accuracy and quality of products by preventing errors during the manufacturing process. ● The basic components of engineering drawings, such as lines (object lines, center lines, hidden lines), dimensions, scales, and symbols. ● Different types of view projections are used in two-dimensional engineering drawings, such as orthographic (front, top, side views), isometric, and perspective projections. ● That there are advantages and limitations of each type of projection in accurately representing different aspects of the object.
Knowledge: Drawing Packets, Working Drawings, Bill of Materials, Standard Content, Revisions, Material Specifications, Scale	**Do/Skills:** Students will be able to… ● Recognize that accurately reading and interpreting these drawings is essential to ensure designs are correctly manufactured and assembled. ● Read dimensions, scales, and annotations on a drawing to accurately interpret the size, shape, and features of the object. ● Derive important information from different drawing features, such as material specifications, tolerances, and surface finishes. ● Show the internal features of an object, and how detail views are used to magnify specific parts of a drawing for better clarity.

Vocabulary: Third-Angle Projection, Auxiliary View, Detail View, Break View, Broken Out Section View, Section View, Isometric View, Assembly, Drawing, Exploded View, Sharing, Collaboration, Comments, Follow Mode, Individuals, Teams, Public, Link Sharing, Copy, Export,	**Core Resources:** ● Fusion 360, Revit, & Onshape ● PC Lab Capable of running software ● Teacher created videos, and demonstrations
Common Assessment(s): 1. Creating engineering drawings activities & assignments 2. Title block information activities & assignments 3. Engineering drawing activities & assignments	**Supplemental Resources:** ● **https://learn.onshape.com/** ● ITEEA Onshape by Design ● YouTube

Grade, Subject/Course: CADD 9-12	
Unit: Engineering Design	**__X__ Essential _____ Important _____ Compact**
Big Idea: The product design process often involves many different people who all need to share information and collaborate on designs. Onshape offers the best industry tools to share design information and have multiple people work on designs simultaneously, creating a more efficient design and iteration process for industry professionals and students.	
STEELS/Tech and Engineering Strand: 3.5.9-12.C Develop a solution to a technological problem that has the least negative environmental and social impact. 3.5.9-12.I (ETS) Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts. 3.5.9-12.K (ETS) Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. 3.5.9-12.P Apply a broad range of design skills to a design thinking process. 3.5.9-12.Q Implement and critique principles, elements, and factors of design. 3.5.9-12.U Evaluate and define the purpose of a design. 3.5.9-12.X Implement the best possible solution to a design using an explicit process. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process. 3.5.9-12.PP Demonstrate the use of conceptual, graphical, virtual, mathematical, and physical modeling to identify conflicting considerations before the entire system is developed and to aid in design decision making.	**Pacing:** 3 weeks
Essential Questions: UEQ: What is the process of solving and engineering problem? LEQ: What is the situation surrounding this problem? LEQ: What is the process of solving and engineering problem? LEQ: Why is this solution needed? LEQ: What is the process of solving and engineering problem? LEQ: Who is the customer that will use this? LEQ: How is research conducted for design problems? LEQ: How are ideas generated and conveyed in the Design Process?	**Understandings:** Students will know that… ● Established design principles are used to evaluate existing designs, to collect data, and to guide the design process ● Engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly ● The engineering design process is a complex process that requires both linear and divergent thinking ● Innovation and invention are the result of creatively solving a problem

LEQ: How are solutions created? LEQ: How are solutions chosen? LEQ: Why are patterns created? LEQ: Why are mock-ups used in the design process? LEQ: What is the difference between prototypes, models, and mock-ups? LEQ: How are parts manufactured? LEQ: What technological processes are used to join materials together? LEQ: How are products tested? LEQ: How are prototypes evaluated? LEQ: What can be learned from the evaluation process?	• Investigation phase of the Engineering Design process is critical to understanding the problem that is being solved • Specifications detail what the parameters that the designed solution needs to meets • Limitations inform the designer what constraints will influence the designed solution or solutions • Proposed solutions are to be based off of the knowledge gained through the investigation process. • A chosen solutions is based off of logical reasoning and not preconceived notions or ideas. • The skills of design and the skills of making things are separate but interwoven through the engineering design process. • Prototypes are the first working example of a solution • Mock-ups are used to better understand the physical and spatial shape of a proposed design solutions • Testing a solutions is the only way to verify if the solution meets the original design problem, specifications and limitations. • During the evaluation phase of design the solution is judge on how well it solved the problem while meeting the specification and staying within the limitations of the projects.
Knowledge: The design process includes defining a problem, brainstorming, researching and generating ideas, identifying criteria and specifying constraints, exploring possibilities, selecting an approach, developing a design proposal, making a model or prototype, testing and evaluating the design using specifications, refining the design, creating or making it, and communicating processes and results.	**Do/Skills:** Students will be able to… • Research and development is a specific problem-solving approach that is used intensively in business and industry to prepare devices and systems for the market- place. • Utilize multidisciplinary approach to problem solving. • Apply a design process to solve problems in and beyond the laboratory-classroom. • Evaluate final solutions and communicate observation, processes, and results of the entire design process, using verbal, graphic, quantitative, virtual, and written means, in addition to three-dimensional models. • List and explain the steps of the Engineering Design Process. • Communicate design intent through a variety of means such as but not limited to sketching, Orthographic projection and 3D solid modeling.
Vocabulary: Design Brief, Investigation, Possible Solutions, Chosen Solution, Developmental Work, Testing, Evaluation, Needs/Wants End Consumers, Market, Ideation, Brainstorming, Thumbnail Sketch, Feasible, doable, possible, practical, Ranking System, Estimation, Limitations, Risk, Layout, Waste, Recycling, Scrap, Prototype, mock-up, model, Parts, Sorting, Lots, Batch, Run, Destructive, Nondestructive, Survey, Processes, Materials, Personnel, Universal systems model, input, process, output, feedback	**Core Resources:** • Fusion 360, Revit, Onshape • PC Lab Capable of running software • Teacher created videos, and demonstrations • Production lab • Laser Engraver • 3D Printers

Common Assessment(s): 1. EHS Engineering Design Packet	**Supplemental Resources:**

Grade, Subject/Course: CADD 9-12	
Unit: Introduction to Architecture	**__X__ Essential _____ Important _____ Compact**
Big Idea:	
STEELS/Tech and Engineering Strand: 3.5.9-12.A Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems. 3.5.9-12.V Apply principles of human-centered design. 3.5.9-12.AA Safely apply an appropriate range of making skills to a design thinking process. 3.5.9-12.PP Demonstrate the use of conceptual, graphical, virtual, mathematical, and physical modeling to identify conflicting considerations before the entire system is developed and to aid in design decision making.	**Pacing:** 2 weeks
Essential Questions: LEQ: How do architects use basic principles and elements of design to create drawing? LEQ: How do architects use and create models to communicate design ideas? LEQ: How do we use architectural drawings to communicate our ideas? How do we identify architectural styles? LEQ: How do architects use computer aided design to create construction and presentation drawings? LEQ: What information is contained in a floor plan? LEQ: What types of loads are present in a structure? LEQ: What is the snow load for our area? LEQ: What is needed for an architectural plan set? LEQ: What information is contained in an elevation view? LEQ: What information is contained in a floorplan? LEQ: What information is continued in a section view?	**Understandings:** Students will know that… ● Basic principles of design are applied in architectural design (balance, contrast, emphasis, movement, pattern, rhythm, unity) ● Physical and digital models are used to convey and communicate an architectural design. ● CAD software is used to create digital architectural designs and drawings. ● CAD tools are used to draft precise construction drawings and create visually appealing presentation drawings. ● The purpose and content contained in a floor plan provides information related to the interior layout of a home along with furnishings, doors, windows, and appliances. ● Load distribution affects the stability of a structure. ● Architects and engineers account for loads when designing a structure. ● There are multiple components of an architectural plan set (e.g., site plans, floor plans, elevations, sections, details). ● Elevation views are used to communicate the appearance of a building from different directions. ● Section views in architectural drawings, including showing internal features that are hidden in the floor plan and elevation views.

Knowledge: Building Codes, Load Types, Floor Plans, Layouts, Fixtures, Appliances, Traffic, Room Layout, Design Rules	**Do/Skills:** Students will be able to… ● Identify and apply the elements of design (line, shape, form, space, texture, value, and color) in architectural drawings. ● Analyze how architects use these principles and elements to communicate functional, aesthetic, and structural aspects of a design. ● Recognize how models help architects visualize, refine, and communicate ideas. ● Develop skills in using CAD software for architectural design, including 2D drafting, 3D modeling, and rendering. ● Interpret a floor plan, including walls, doors, windows, dimensions, and annotations. ● Identify and describe different types of loads in structural engineering (dead loads, live loads, environmental loads such as wind and snow). ● Recognize the importance of including all required elements in a complete architectural plan set for construction. ● Learn to identify and interpret elements in a section view, such as ceiling heights, wall materials, structural components, and details of building systems.
Vocabulary: Elevation View, Floor PLan, Section View, Detail View, Load, Traffic, Appliances, Square Footage, Plot Plan	**Core Resources:** ● Architectural Software ● PC Lab Capable of running software ● Teacher created videos, and demonstrations ● Internet Access ● Floor Planning Software
Common Assessment(s): 1. Floor plan activities 2. Kitchen Design 3. Floor Plan Project	**Supplemental Resources:**