

Geneva CUSD 304
Content-Area Curriculum Frameworks
Grades 6-12
Industrial Technology – CAD I

Mission Statement	<p>As an industrial technology department our mission is:</p> <p>To motivate all students to develop problem solving skills that will promote creative thinking and create a safe working environment.</p> <p>To teach all students the proper and safe manner to use tools and equipment to learn and use practical life skills through a variety of hands on activities.</p>
Course Sequence (Grades 6-12)	<p>Computer Aided Drafting I: Open to all students 9 - 12th grade students.</p> <p>Computer Aided Drafting II: Open to all 9 - 12th grade students who successfully complete CAD I.</p> <p>Computer Aided Drafting III: Open to 10 - 12th grade students who successfully complete CAD II.</p> <p>Computer Aided Drafting IV: Open to 10 - 12th grade students who successfully complete CAD III.</p> <p>Architectural Drafting: Open to all 9-12th grade students who successfully complete CAD I.</p> <p>Woods I: Open to all 9 - 12th grade students.</p> <p>Woods II: Open to all 9 – 12th grade students who successfully complete Woods I.</p> <p>Woods III: Open to all 10 –12th grade students who successfully complete Woods II and have a pre-approved project from the instructor.</p> <p>Woods IV: Open to all 10 – 12th grade students who successfully complete Woods II and have a pre-approved project from the instructor.</p> <p>Industrial Technology: Open to all 9 – 12th grade students</p>

Course Framework

Course Title Grade Level Semesters (1-2-3-4) Prerequisite	Computer Aided Drafting I 9-12 None
Course Description	<p>This beginning course in drafting allows students to study and work on a variety of topics related to mechanical drawing. We will be learning how to complete basic drawings in the areas of geometric construction, orthographic views, 3D modeling and isometrics. Measurement, dimensioning, sketching, spatial visualization and organizational tools will be other tools used to complete these tasks. Course discussion topics also include animation, manufacturing, problem-solving and advances in technology. Computer and board drafting will be used to complete all projects. Hands-on projects will help to further reinforce topics covered. This is a beneficial course for anyone interested in engineering, product design and architecture as it is highly recommended by former students who have entered those fields. (Valees #I200)</p>
District-approved Materials and/or Resources	Basic Technical Drawing – Spencer, Dygdon, and Novak Glencoe / McGraw Hill 2004

Unit Frameworks

Unit of Study: major topics	Getting Started – Board Drafting <ul style="list-style-type: none"> • Drafting Tools • Alphabet of Lines • Drafting Terminology • Measurement 	Resources that will support instruction
Illinois Learning Standards, Benchmarks, National Standards Assessment Frameworks, or other standards that will be taught in this unit	<p>1A – 7H - Students who meet the standard can apply word analysis and vocabulary skills to comprehend selections.</p> <ul style="list-style-type: none"> • Recognize specialized vocabulary/terminology. <p>1B – 5,6H - Students who meet the standard can apply reading strategies to improve understanding and fluency.</p> <ul style="list-style-type: none"> • Demonstrate an accurate understanding of important information in the text by focusing on the key ideas presented explicitly or implicitly. • Identify how different content areas require different organizational structures (e.g., lists/sequence, comparison, cause/effect, problem/solution, classification). <p>1C – 2,10,12,13,14H - Students who meet the standard can comprehend a broad range of reading materials.</p> <ul style="list-style-type: none"> • Generate and respond to questions that reflect higher level thinking skills (e.g., analysis, synthesis, evaluation). • Synthesize key points and supporting details to form conclusions. • Recognize how illustrations reflect, interpret and enhance the text. • Draw conclusions based on information found in visual information and data. • Explain how visual information and data support written text. 	
Objectives <ul style="list-style-type: none"> ○ Conceptual ○ Factual ○ Procedural 	Students will be able to: <ul style="list-style-type: none"> • Identify and use the tools needed for manual drafting • Copy a drawing using tools for manual drafting • Demonstrate understanding of how the drafting process works. 	
Assessments	Performance Tasks Students will be assessed on the following: Completion of reading, written and drawn assignments using local assessments	Other Evidence Students will complete a quiz in regards to identifying the various tools used in drafting.

Unit of Study: major topics	Introduction to CAD <ul style="list-style-type: none"> • Introduction to the AutoCAD Software • Tools of the software • Using math concepts to create a drawing. 	Resources that will support instruction The textbook and demonstrations using the software. Handouts outlining processes and tools
Illinois Learning Standards, Benchmarks, National Standards Assessment Frameworks, or other standards that will be taught in this unit	1A – 7H - Students who meet the standard can apply word analysis and vocabulary skills to comprehend selections. <ul style="list-style-type: none"> • Recognize specialized vocabulary/terminology. 1B – 5,6H - Students who meet the standard can apply reading strategies to improve understanding and fluency. <ul style="list-style-type: none"> • Demonstrate an accurate understanding of important information in the text by focusing on the key ideas presented explicitly or implicitly. • Identify how different content areas require different organizational structures (e.g., lists/sequence, comparison, cause/effect, problem/solution, classification). 1C – 2,10,12,13,14H - Students who meet the standard can comprehend a broad range of reading materials. <ul style="list-style-type: none"> • Generate and respond to questions that reflect higher level thinking skills (e.g., analysis, synthesis, evaluation). • Synthesize key points and supporting details to form conclusions. • Recognize how illustrations reflect, interpret and enhance the text. • Draw conclusions based on information found in visual information and data. • Explain how visual information and data support written text. 	
Objectives <ul style="list-style-type: none"> ○ Conceptual ○ Factual ○ Procedural 	Students will be able to: <ul style="list-style-type: none"> • Identify and use the tools needed for computer-aided drafting • Apply drafting concepts to the creation of new drawings on AutoCAD • Demonstrate understanding of how the drafting process works. • Use a document template that they have set up. • Set-up their computer workspace appropriately. 	
Assessments	Performance Tasks Students will be assessed on the following: Completion of reading, written and drawn assignments using local assessments	Other Evidence Students will complete a quiz in regards to identifying the various tools and how they are used in computer-aided drafting.

Unit of Study: major topics	Geometric Construction Geometric Terms Using math concepts to complete a drawing Using simple shapes to complete the drawing of more complex geometry	Resources that will support instruction Textbook
Illinois Learning Standards, Benchmarks, National Standards Assessment Frameworks, or other standards that will be taught in this unit	1A – 7H - Students who meet the standard can apply word analysis and vocabulary skills to comprehend selections. <ul style="list-style-type: none"> • Recognize specialized vocabulary/terminology. 1B – 5,6H - Students who meet the standard can apply reading strategies to improve understanding and fluency. <ul style="list-style-type: none"> • Demonstrate an accurate understanding of important information in the text by focusing on the key ideas presented explicitly or implicitly. • Identify how different content areas require different organizational structures (e.g., lists/sequence, comparison, cause/effect, problem/solution, classification). 1C – 2,10,12,13,14H - Students who meet the standard can comprehend a broad range of reading materials. <ul style="list-style-type: none"> • Generate and respond to questions that reflect higher level thinking skills (e.g., analysis, synthesis, evaluation). • Synthesize key points and supporting details to form conclusions. • Recognize how illustrations reflect, interpret and enhance the text. • Draw conclusions based on information found in visual information and data. • Explain how visual information and data support written text. 	
Objectives <ul style="list-style-type: none"> ○ Conceptual ○ Factual ○ Procedural 	Students will be able to: <ul style="list-style-type: none"> • Complete drawings of more complex geometry using basic shapes and geometric concepts • Identify geometric concepts as they apply to drafting 	
Assessments	Performance Tasks Students will be assessed on the following: Completion of reading, written and drawn assignments using local assessments	Other Evidence Students will complete a quiz in regards to completing the appropriate type of drawing

Unit of Study: major topics	Orthographic Projection <ul style="list-style-type: none"> • Visualization • Communication of ideas and objects • Projection • Object geometry 	Resources that will support instruction <ul style="list-style-type: none"> • Spatial Visualization Workbook
Illinois Learning Standards, Benchmarks, National Standards Assessment Frameworks, or other standards that will be taught in this unit	1A – 7H - Students who meet the standard can apply word analysis and vocabulary skills to comprehend selections. <ul style="list-style-type: none"> • Recognize specialized vocabulary/terminology. 1B – 5,6H - Students who meet the standard can apply reading strategies to improve understanding and fluency. <ul style="list-style-type: none"> • Demonstrate an accurate understanding of important information in the text by focusing on the key ideas presented explicitly or implicitly. • Identify how different content areas require different organizational structures (e.g., lists/sequence, comparison, cause/effect, problem/solution, classification). 1C – 2,10,12,13,14H - Students who meet the standard can comprehend a broad range of reading materials. <ul style="list-style-type: none"> • Generate and respond to questions that reflect higher level thinking skills (e.g., analysis, synthesis, evaluation). • Synthesize key points and supporting details to form conclusions. • Recognize how illustrations reflect, interpret and enhance the text. • Draw conclusions based on information found in visual information and data. • Explain how visual information and data support written text. 	
Objectives <ul style="list-style-type: none"> ○ Conceptual ○ Factual ○ Procedural 	Students will be able to: <ul style="list-style-type: none"> • Communicate the ideas and measurements of an object using 2D drawings • Use existing geometry to create new geometry 	
Assessments	Performance Tasks Students will be assessed on the following: Completion of reading, written and drawn assignments using local assessments	Other Evidence Students will complete a quiz in regards to completing the appropriate type of drawing

Unit of Study: major topics	Dimensioning <ul style="list-style-type: none"> • Types of dimensions • Dimension Styles • Dimensioning Rules • Measurement • Annotation • Scale 	Resources that will support instruction Textbook Real-Life models and application
Illinois Learning Standards, Benchmarks, National Standards Assessment Frameworks, or other standards that will be taught in this unit	1A – 7H - Students who meet the standard can apply word analysis and vocabulary skills to comprehend selections. <ul style="list-style-type: none"> • Recognize specialized vocabulary/terminology. 1B – 5,6H - Students who meet the standard can apply reading strategies to improve understanding and fluency. <ul style="list-style-type: none"> • Demonstrate an accurate understanding of important information in the text by focusing on the key ideas presented explicitly or implicitly. • Identify how different content areas require different organizational structures (e.g., lists/sequence, comparison, cause/effect, problem/solution, classification). 1C – 2,10,12,13,14H - Students who meet the standard can comprehend a broad range of reading materials. <ul style="list-style-type: none"> • Generate and respond to questions that reflect higher level thinking skills (e.g., analysis, synthesis, evaluation). • Synthesize key points and supporting details to form conclusions. • Recognize how illustrations reflect, interpret and enhance the text. • Draw conclusions based on information found in visual information and data. • Explain how visual information and data support written text. 	
Objectives <ul style="list-style-type: none"> ○ Conceptual ○ Factual ○ Procedural 	Students will be able to: <ul style="list-style-type: none"> • Describe the rules of dimensioning as they apply to their drawings • Evaluate drawings based on the dimension styles • Apply the rules of dimensioning to their assignments. • Set-up appropriate dimension styles. • Covert basic fractions to decimals and vice versa • Use a scale • Scale drawings appropriately for printing • Divide fractions • Use annotative scaling. 	
Assessments	Performance Tasks Students will be assessed on the following: Completion of reading, written and drawn assignments using local assessments	Other Evidence Students will complete a quiz in regards to identifying the dimensioning tools used in drafting and complete a self- and peer evaluation activity.

Unit of Study: major topics	Pictorial Drawing – Isometric and Oblique <ul style="list-style-type: none"> • Isometric Drawing • Oblique Drawing 	Resources that will support instruction
Illinois Learning Standards, Benchmarks, National Standards Assessment Frameworks, or other standards that will be taught in this unit	1A – 7H - Students who meet the standard can apply word analysis and vocabulary skills to comprehend selections. <ul style="list-style-type: none"> • Recognize specialized vocabulary/terminology. 1B – 5,6H - Students who meet the standard can apply reading strategies to improve understanding and fluency. <ul style="list-style-type: none"> • Demonstrate an accurate understanding of important information in the text by focusing on the key ideas presented explicitly or implicitly. • Identify how different content areas require different organizational structures (e.g., lists/sequence, comparison, cause/effect, problem/solution, classification). 1C – 2,10,12,13,14H - Students who meet the standard can comprehend a broad range of reading materials. <ul style="list-style-type: none"> • Generate and respond to questions that reflect higher level thinking skills (e.g., analysis, synthesis, evaluation). • Synthesize key points and supporting details to form conclusions. • Recognize how illustrations reflect, interpret and enhance the text. • Draw conclusions based on information found in visual information and data. • Explain how visual information and data support written text. 	
Objectives <ul style="list-style-type: none"> ○ Conceptual ○ Factual ○ Procedural 	Students will be able to: <ul style="list-style-type: none"> • Complete pictorial drawings in the Isometric style using the appropriate tools. • Distinguish the reasons for using isometric drawings and oblique drawings respectively. • Complete pictorial drawings in the oblique style. 	
Assessments	Performance Tasks Students will be assessed on the following: Completion of reading, written and drawn assignments using local assessments	Other Evidence Students will complete a quiz in regards to completing the appropriate type of drawing

Unit of Study: major topics	Problem Solving <ul style="list-style-type: none"> • Real Life application of material covered • Problem Solving Processes 	Resources that will support instruction
Illinois Learning Standards, Benchmarks, National Standards Assessment Frameworks, or other standards that will be taught in this unit	1A – 7H - Students who meet the standard can apply word analysis and vocabulary skills to comprehend selections. <ul style="list-style-type: none"> • Recognize specialized vocabulary/terminology. 1B – 5H - Students who meet the standard can apply reading strategies to improve understanding and fluency. <ul style="list-style-type: none"> • Demonstrate an accurate understanding of important information in the text by focusing on the key ideas presented explicitly or implicitly. 1C – 2,10,12,13,14H - Students who meet the standard can comprehend a broad range of reading materials. <ul style="list-style-type: none"> • Generate and respond to questions that reflect higher level thinking skills (e.g., analysis, synthesis, evaluation). • Synthesize key points and supporting details to form conclusions. • Recognize how illustrations reflect, interpret and enhance the text. • Draw conclusions based on information found in visual information and data. • Explain how visual information and data support written text. 	
Objectives <ul style="list-style-type: none"> ○ Conceptual ○ Factual ○ Procedural 	Students will be able to: <ul style="list-style-type: none"> • Identify when and where problem solving processes can and should be used. • Apply what they have previously learned in class to a real-life experience/ design project. • Identify the concept of problem solving and apply it to a given situation and • Demonstrate understanding of how the drafting process works. • Use measurement and dimensioning to communicate their design • Write directions for another person to explain how something was created while integrating the created drawings/sketches. • Identify elements of the design loop. • Apply the desing loop to projects at hand. • Identify their own current strengths and weaknesses in regards to how one goes about solving a problem 	
Assessments	Performance Tasks Students will complete a project in which they are to take drawings without measurements and recreate them on the computer to then use in the creation of a	Other Evidence These skills along with others learned in the course will then be evaluated through the completion of the semester exam.

	<p>model device. Students will also spend time on self-evaluation. Grading will be based upon accuracy and successful completion of the model and how well it functions.</p>	
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Unit of Study: major topics	History of Technology	Resources that will support instruction
Illinois Learning Standards, Benchmarks, National Standards Assessment Frameworks, or other standards that will be taught in this unit	16A - 4a Analyze and report historical events to determine cause-and-effect relationships.	
Objectives <ul style="list-style-type: none"> ○ Conceptual ○ Factual ○ Procedural 	<ul style="list-style-type: none"> ○ Identify how history and technology affect each other. ○ Describe the basic influence of technology ○ Describe how and why technology changes. 	
Assessments	<p>Performance Tasks The culminating activity will be for students to complete a research project on the history of one invention and then share it with the class.</p> <p>Prior to this time will be spent on classroom activities and discussions focusing on the topic.</p> <p>Short answer questions will be included on the exam.</p>	Other Evidence