DRAFTING/PRINT READING
Grade(s) 9-12

Unit 1

Overview of Drafting and Design

Essential Question
How does drafting serve as a foundation for design and construction across various industries?

Unit Summary
This unit introduces students to the fundamental concepts of drafting, including types of drawings, careers in drafting, and drafting standards. Students will explore the role of drafting in architecture, engineering, and construction while becoming familiar with industry standards and symbols.

Guiding Questions
Content

- What are the different types of drawings used in drafting?
- How do drafting standards impact the clarity and consistency of technical drawings?
- What careers are available in the field of drafting?

Process

- How can different views be used to accurately interpret technical drawings?
- How do drafting symbols and line styles communicate design intent?
- What tools and software can assist in drafting?

Reflective

- How does drafting relate to real-world engineering and architectural projects?
- What skills are necessary to succeed in a drafting career?
- How can accurate technical drawings improve communication in construction and manufacturing?

Priority Standards

- 1.1 - Identify types of architectural and mechanical drawings.
- 1.2 - Display knowledge of careers in architecture and drafting.
- 1.3 - Display knowledge of drafting standards (line styles, dimensions, sheet layout, etc.)
- 1.4 - Demonstrate ability to perform manual drafting skills.
- 1.5 - Demonstrate ability to do lettering on a drawing.
- 1.6 - Demonstrate ability to perform sketching, geo construction and 2d drawing.
- 1.7 - Demonstrate the ability to dimension a drawing.
- 1.8 - Demonstrate visualization skills in orthographic projection.
- 1.9 - Display knowledge of architectural symbols.

Supporting Standards

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

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Unit 2

Technical Sketching and Drafting Techniques

Essential Question
How do sketching and manual drafting techniques help visualize and communicate design ideas?

Unit Summary
This unit focuses on developing students' skills in freehand sketching, lettering, and manual drafting. Students will practice visualizing objects in different perspectives and constructing multi-view projections while understanding proportion, scale, and dimensioning.

Guiding Questions
Content
- What are the fundamental principles of technical sketching?
- How does lettering contribute to the clarity of technical drawings?
- What is the importance of proportion and scale in drafting?

Process
- How can orthographic projection help in representing 3D objects on 2D media?
- How do geometric constructions contribute to precise technical drawings?
- What techniques improve manual drafting accuracy?

Reflective
- Why is sketching still relevant in a digital drafting environment?
- How do manual drafting skills translate to CAD?
- What challenges arise when visualizing and sketching complex designs?

Priority Standards

- 1.1 - Identify types of architectural and mechanical drawings.
- 1.2 - Display knowledge of careers in architecture and drafting.
- 1.3 - Display knowledge of drafting standards (line styles, dimensions, sheet layout, etc.)
- 1.4 - Demonstrate ability to perform manual drafting skills.
- 1.5 - Demonstrate ability to do lettering on a drawing.
- 1.6 - Demonstrate ability to perform sketching, geo construction and 2d drawing.
- 1.7 - Demonstrate the ability to dimension a drawing.
- 1.8 - Demonstrate visualization skills in orthographic projection.
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Unit 3

Engineering/Mechanical CAD

Essential Question
How does computer-aided design (CAD) enhance the accuracy and efficiency of mechanical drafting?

Unit Summary
Students will learn the fundamentals of CAD software and its application in mechanical design. They will create precise 2D and 3D drawings, apply dimensioning techniques, and interpret geometric dimensioning and tolerancing (GD&T) standards.

Guiding Questions
Content
- What are the primary functions of CAD software in engineering drafting?
- How do dimensioning and tolerancing ensure the functionality of mechanical components?
- What are the best practices for creating detailed mechanical drawings?

Process
- How does CAD improve upon manual drafting methods?
- What steps are involved in creating a technical drawing using CAD?
- How do different CAD tools facilitate the design and modification of mechanical parts?

Reflective
- How does CAD technology influence modern engineering and manufacturing?
- What skills are essential for proficiency in CAD?
- How can CAD improve collaboration among engineers and designers?

Priority Standards

- 1.1 - Identify types of architectural and mechanical drawings.
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- 1.3 - Display knowledge of drafting standards (line styles, dimensions, sheet layout, etc.)
- 1.4 - Demonstrate ability to perform manual drafting skills.
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- 1.7 - Demonstrate the ability to dimension a drawing.
- 1.8 - Demonstrate visualization skills in orthographic projection.
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Unit 4

Architecture CAD

Essential Question
How do architectural drawings communicate design intent and construction details?

Unit Summary
This unit introduces students to architectural drafting principles, including floor plans, elevations, sections, and building codes. Students will use CAD tools to create architectural drawings while considering industry standards and client requirements.

Guiding Questions
Content
- What are the key elements of an architectural drawing?
- How do building codes and standards influence design?
- What role does scale play in architectural drafting?

Process
- How do architects use different views to convey design information?
- What steps are involved in drafting a complete set of architectural drawings?
- How can CAD tools be used to enhance architectural design?

Reflective
- How do architectural drawings impact the construction process?
- What challenges do architects face when translating design concepts into technical drawings?
- How does architectural drafting relate to sustainability and modern building practices?

Priority Standards

- 1.1 - Identify types of architectural and mechanical drawings.
- 1.2 - Display knowledge of careers in architecture and drafting.
- 1.3 - Display knowledge of drafting standards (line styles, dimensions, sheet layout, etc.)
- 1.4 - Demonstrate ability to perform manual drafting skills.
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