ESCONDIDO UNION HIGH SCHOOL DISTRICT

Graphic Production Technologies

Approved by the Board of Education on August 2, 2022
Mission and Vision

We relentlessly pursue, with optimism, equitable support for all students to navigate a changing world by providing rigorous and relevant learning experiences that strengthen their capacity as

- Open-minded and invested collaborators;
- Effective and thoughtful communicators;
- Resourceful and creative problem solvers;
- Curious and analytical critical thinkers;
- Informed and compassionate community members.

EUHSD curriculum identifies what students should know and be able to do by grade level in a comprehensive, standards-based course of study. Curriculum may be updated, as needed, based on student academic achievement data, research and best practices, and input from stakeholders. The EUHSD curriculum contains the following information:

- **Course Description** – provides a description of the overarching content and goals of the course and is used in the Course Catalog.
- **Course Information** – provides information specific to length of course, course number, transcript abbreviation, credits earned.
- **Course Requirements** – provides information specific to credits, prerequisites, UC/CSU requirements, and grade level of the course.
- **Course Material(s)** – Instructional materials used in course.
- **Scope and Sequence** – provides the standards-based units of instruction including the Learning Objective and Sample Performance Tasks and Assessments.

To ensure all courses empower every student, specifically emerging multilingual students, to graduate prepared for college, career, and life, all EUHSD courses will:

- Incorporate the English Language Development state standards adopted by the CA Department of Education in 2012. Visit the following website to learn more about the new descriptors and corresponding standards: [https://www.cde.ca.gov/sp/el/er/documents/eldstndspublication14.pdf](https://www.cde.ca.gov/sp/el/er/documents/eldstndspublication14.pdf)
- Highlight specific strategies designed to meet the needs of emerging multilingual students as outlined in the 2014 CA Department of Education ELA-ELD Framework and the 2017 CA EL Roadmap. Visit the following URL to learn more about the new Frameworks: [https://www.cde.ca.gov/ci/rl/cf/documents/elaeldfwchapter11.pdf](https://www.cde.ca.gov/ci/rl/cf/documents/elaeldfwchapter11.pdf). To learn more about the CA EL Roadmap, visit the following website: [https://www.cde.ca.gov/sp/el/rm/](https://www.cde.ca.gov/sp/el/rm/)

Escondido Union High School District prohibits discrimination, harassment, intimidation, and bullying based on actual or perceived ancestry, age color, disability, gender, gender identity, gender expression, nationality, race or ethnicity, religion, sex, sexual orientation, pregnancy, marital or parental status or association with a person or group with one or more of these actual or perceived characteristics.

Dr. Courtney Goode, Assistant Superintendent of Human Resources, Equity and Title IX Compliance Officer
302 N. Midway Drive, Escondido, CA 92027
Office: (760) 291-3281, Email: cgoode@euhsd.org
The Graphic Production Technologies course introduces students to foundational concepts in printing and modeling, and develops skills in creative problem solving, aesthetic literacy, visual analysis, computer assisted design, and an understanding of design thinking across history and cultures. Course projects focus on the sculptural elements of form, structure, and surface. Each unit within the course touches upon an aspect of one or more of these elements. The course approaches design from a fine-art perspective, focusing on critical visual analysis and conceptual implications of formal elements. Students engage with a variety of materials, sculptural techniques, and theoretical frameworks. Students learn fabrication methods using latex and 3D printers.

Teaching methods include slide presentations, teacher-developed video tutorials, in-class demonstration of sculptural techniques, group discussions, and critique. Studio work includes collaborative and individual projects and is supplemented with reading assignments, artist presentations, and field trips. Students collect ideas, brainstorm, sketch designs, conduct visual analysis, and reflect on their own work in a sketchbook. Formal investigations lead students through Design Thinking concepts of discovery, interpretation, ideation, experimentation, and evolution.

### Course Information

| Semester A: | Course Number: 6486 | Transcript Abbreviation: | GRPH PROD TECH A (P) | Credits: 5 | Weighted: No |
| Semester B: | Course Number: 6487 | Transcript Abbreviation: | GRPH PROD TECH B (P) | Credits: 5 | Weighted: No |

### Course Requirements

| Length of Course: Yearlong | Course Learning Environment: Classroom Based | Type of Grade: Letter Grade |
| Grade Level: 9-12 | Course Repeatable: No | Maximum Credits, if Repeatable: N/A |
| Course Type: College Prep | Designated College Prep/CTE: Yes | CTE Course Level: Concentrator |
| Meets EUHSD Graduation Requirement: Fine Arts or Designated College Prep/CTE or Elective Credit | Pathway: Graphic Production Technologies |
| Meets UC/CSU Requirement: F: Visual and Performing Arts | UC Honors Designation: No |
| Required Prerequisite(s): None |
| Recommended Prerequisite(s): None |

### Course Material(s)

- This course uses Open Educational Resources (OERs) in order to access current digital libraries that are pivoting rapidly to industry needs.

### Standards

Common Core State Standards English Language Arts & Literacy, California Department of Education Career Technical Education Manufacturing and Product Development - Knowledge and Performance Anchor Standards, CTE Graphic Production Technologies Pathway Standards, and California Arts Standards for Media Arts and Visual Arts (VAPA Standards)
### Unit 1: Overview of Graphic Communications, Health and Safety

#### Unit Description
This unit is an overview of graphic communications. It consists of two parts: Overview of Graphic Communications and Safety and Health. Students will be able to explain the important role of graphic communications in our technological society today, including the major processes, classification, and opportunity for future employment. Students will have a complete understanding of safety in the classroom and the print shop including: 1) read and understand Material Safety Data Sheet (MSDS) paperwork; 2) general housekeeping; and 3) operation of equipment. In addition, the student will have read, understood, and signed all appropriate agreements and passed a general safety test with a score of 100%.

#### Standards

**Common Core State Standards English Language Arts & Literacy:**
- **Writing Standard:** Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic. ([CCSS.ELA-LITERACY.W.11-12.4](#))
- **Writing Standard:** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. ([CCSS.ELA-LITERACY.W.11-12.4](#))

**Manufacturing and Product Development - Knowledge and Performance Anchor Standards:**
- **6.0 Health and Safety:** Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Manufacturing and Product Design sector workplace environment.
- **10.0 Technical Knowledge and Skills:** Apply essential technical knowledge and skills common to all pathways in the Manufacturing and Product Design sector, following procedures when carrying out experiments or performing technical tasks.

**Graphic Production Technologies Pathway Standards:**
- **A13.0 Understand and apply integrated graphic multimedia technologies, combining graphics, photographic imagery, motion graphics and animation, video, and special effects.**

#### Unit Outline

<table>
<thead>
<tr>
<th>Standards</th>
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<th>Essential Questions</th>
</tr>
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<tbody>
<tr>
<td><strong>Students will…</strong></td>
<td><strong>explain the important role of graphic communications in our technological society today, including the major processes, classification, and opportunity for future employment.</strong></td>
<td>1. What is the role of graphic communications in our society?</td>
</tr>
<tr>
<td></td>
<td><strong>demonstrate safety in the classroom and the print shop including: 1) read and understand MSDS paperwork; 2) general housekeeping; and 3) operation of equipment.</strong></td>
<td>2. How does technology help and hinder communication?</td>
</tr>
</tbody>
</table>

#### Sample Performance Tasks/Assessments
- Throughout the course students will interact with a variety of digital software and applications. They will learn to navigate Adobe Creative Suite. Students will understand the commands common to all Adobe Creative Suite applications. They will demonstrate their learning through a series of teacher assigned tasks and will perform these through a series of assigned tasks.
- Students will complete a career exploration task using the internet and other resources. Students will explore career opportunities in graphic design. Students will research and discover what job possibilities exist in printing and graphics. They will compare job skills and paychecks to analyze what concentration they would like to pursue. Students will continue to
• A13.1 Apply design strategies in selecting graphic multimedia technologies to produce dynamic effective visual communication.
• A13.2 Practice the steps in producing an integrated graphic multimedia project designed to inform, teach, or sell.
• A13.3 Produce an integrated graphic multimedia project.
• A14.0 Identify the different industries that utilize graphic design and identify other potential business opportunities for graphic design applications.
• A14.1 Apply research methodologies and business and entrepreneurial principles to identify potential business opportunities to apply graphic and multimedia design.

California Arts Standards for Media Arts:
• Acc.MA:Cn11: a. Examine in depth and demonstrate the relationships of media arts ideas and works to various contexts, purposes, and values, such as markets, systems, propaganda, and truth.
• Acc.MA:Cn11: b. Critically investigate and proactively interact with legal, technological, systemic, and vocational contexts of media arts, considering civic values, media literacy, digital identity, and artist/audience interactivity.

explore this area throughout the course and will have to create a job resume and cover letter as a culminating activity. Students will add information from the career exploration task to their notes and keep throughout the course.
• Course Sketchbook: Students maintain a sketchbook throughout the year-long course, which serves as means to collect, record, and manage notes and materials for each project. This repository also serves as a resource for brainstorming, ideation and documentation of key principles and technical information.
• Written assignments in the sketchbook include visual analyses of works of art and designed objects, giving students the opportunity to display critical thinking skills and visual literacy. The sketchbook is an important assessment tool for the teacher, exhibiting understanding of the process of creating, designing, and analyzing 3D art.
• CTSO Activities: Student Organization will be a Skate Club that will support the mission of this class, promote positive skateboarding practices, and participate in school and community service projects.
## Unit 2: Measurement and Typography

### Unit Description
This unit is an introduction to measurement within the field of graphic design, including but not limited to the common type sizes and units used in typography. It focuses on computer applications for: 1) measurement; 2) typography 3) projects to be constructed in the Adobe Creative Suite applications. For designers, typography is a way to use text as a visual to convey a brand message. This design element is important for graphic designers not only to build personality, convey a message but also to grab the viewer’s attention, build a hierarchy, brand recognition, harmony and establish value and tone of a brand. In this unit, students will explore the different forms of typography and its importance to graphic design.

### Unit Outline

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<tr>
<td><strong>Common Core State Standards English Language Arts &amp; Literacy:</strong></td>
<td></td>
<td>1. What is typography? 2. Why is typography important to graphic design?</td>
</tr>
<tr>
<td>● Reading Standard: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. (<a href="#">CCSS.ELA-LITERACY.RLST.11-12.3</a>).</td>
<td>Students will…</td>
<td></td>
</tr>
<tr>
<td>● Reading Standard: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. (<a href="#">CCSS.ELA-LITERACY.RLST.11-12.4</a>).</td>
<td>● demonstrate an understanding of the point system type measurement and be able to apply it to a variety of events as assigned by the instructor.</td>
<td></td>
</tr>
<tr>
<td>● Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. (<a href="#">CCSS.ELA-LITERACYW.11-12.6</a>).</td>
<td>● explain standard grades of paper and basic paper sizes.</td>
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</tr>
</tbody>
</table>

### Manufacturing and Product Development - Knowledge and Performance Anchor Standards:
- **4.0 Technology:** Use existing and emerging technology, to investigate, research, and produce products and services, including new information, as required in the Manufacturing and Product Design sector workplace environment.
- **10.0 Technical Knowledge and Skills:** Apply essential technical knowledge and skills common to all pathways in the Manufacturing and Product Design sector, following procedures when carrying out experiments or performing technical tasks.

### Sample Performance Tasks/Assessments
- Students will learn about the point system for measuring type and apply that knowledge in creating a document and choosing font sizes as directed by the instructor. They will complete various exercises on typography and typefaces.
- Students will practice the proportional scaling of a photograph as well as targeting a specific area and cropping said area. Students will differentiate between proportional scaling and cropping.
- Students will compose a document as led by the instructor to contain the following: two-three different fonts, an illustration that is repeated throughout the document, a proportionately scaled photograph, a cropped...
**Graphic Production Technologies Pathway Standards:**
- A1.0 Apply the basic graphic design principles to achieve effective visual communication.
- A1.1 Identify the relationships between space, color, image, and content.
- A1.2 Demonstrate the graphic design principles and the utilization of the grid system in applying those principles.
- A1.3 Create a basic layout applying images, text, and typography.
- A1.4 Create and choose font styles.
- A3.4 Create a visually effective layout that communicates an intention using graphic software that integrates graphics, text, photographic imagery, and color.
- A13.1 Apply design strategies in selecting graphic multimedia technologies to produce dynamic effective visual communication.
- A13.2 Practice the steps in producing an integrated graphic multimedia project designed to inform, teach, or sell.
- A13.3 Produce an integrated graphic multimedia project.
- A14.0 Identify the different industries that utilize graphic design and identify other potential business opportunities for graphic design applications.

**California Arts Standards for Visual Arts:**
- Acc.VA:Cr1.1: Individually or collaboratively formulate new creative problems based on students’ existing artwork.
- Prof.VA:Cr1.1: Use multiple approaches to begin creative endeavors.
- Acc.VA:Cr2.1: Through experimentation, practice, and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
- Prof.VA:Cr3: Apply relevant criteria from traditional and contemporary cultural contexts to examine, reflect on, and plan revisions for works of art and design in progress.

Photograph. All of the above will be designed to deliver visual communication to a selected audience.
- Course Sketchbook: Students maintain a sketchbook throughout the year-long course, which serves as means to collect, record, and manage notes and materials for each project. This repository also serves as a resource for brainstorming, ideation and documentation of key principles and technical information.
- Written assignments in the sketchbook include visual analyses of works of art and designed objects, giving students the opportunity to display critical thinking skills and visual literacy. The sketchbook is an important assessment tool for the teacher, exhibiting understanding of the process of creating, designing, and analyzing 3D art.
- CTSO Activities: Student Organization will be a Skate Club that will support the mission of this class, promote positive skateboarding practices, and participate in school and community service projects.
**Unit 3: Digital Image**

**Unit Description**
This unit will lead students on a journey into the field of digital imaging technology and the types of equipment and methods involved in electronic image capture. Adobe Creative Suite will provide a suite of applications in which to place and edit the images captured. The strength of this suite of applications is that Photoshop, Illustrator, and InDesign all work together to provide a professional product. In addition, students will be learning about color science, vision, and space. Students will learn and develop a basic understanding of color and the ways to describe the relationships between colors to be able to use it as an important design element. At the end of this unit, students will be able to explain and produce color separations for use in digital printing and screen-printing. Students will create color schemes for use in product marketing. Students will produce a one-color screen print and the copy for a two-color separation.

**Unit Outline**

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<td><strong>Common Core State Standards English Language Arts &amp; Literacy:</strong></td>
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<tr>
<td>● <strong>Reading Standard:</strong> Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. (CCSS.ELA-LITERACY.RLST.11-12.3)</td>
<td>Students will…</td>
<td>1. How is color used in graphic design?</td>
</tr>
<tr>
<td>● <strong>Reading Standard:</strong> Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. (CCSS.ELA-LITERACY.RLST.11-12.4)</td>
<td>● create a color scheme for business marketing purposes.</td>
<td>2. How is color theory used in computer generated art and design?</td>
</tr>
<tr>
<td>● <strong>Writing Standard:</strong> Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. (CCSS.ELA-LITERACY.W.11-12.6)</td>
<td>● demonstrate the ability to create multiple color schemes for different uses.</td>
<td></td>
</tr>
<tr>
<td><strong>Manufacturing and Product Development - Knowledge and Performance Anchor Standards:</strong></td>
<td>● demonstrate ability to utilize technology to restore digital images.</td>
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</tr>
<tr>
<td>● 2.0 Communications: Acquire and accurately use Manufacturing and Product Design sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.</td>
<td></td>
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</tr>
<tr>
<td>● 4.0 Technology: Use existing and emerging technology, to investigate, research, and produce products and services,</td>
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</tbody>
</table>

**Sample Performance Tasks/Assessments**

- Synthesizing what they have learned, students will be able to produce an appropriate color scheme relative to the businesses assigned by the instructor. Students will provide a relevant marketing packet and explain it orally before a group of peers.
- Students will use the Adobe application Illustrator to create their own color wheel. From this color wheel, students will create the following color schemes: monochromatic, complementary, and triad.
- Students will bring an old photo from home, digitize, and restore it via a variety of techniques including fixing color and tone, eliminating fold-marks and modifying sizing. They may also colorize if desired. This new photograph can be printed on photo paper and saved. It also needs to be submitted for a grade through Canvas by instructor with a written explanation of the work done on the photograph to transfer it to its now digitized, restored state.
- Course Sketchbook: Students maintain a sketchbook throughout the year-long course, which serves as means to collect, record, and manage notes and materials for each project. This repository also serves as a resource for
including new information, as required in the Manufacturing and Product Design sector workplace environment.

- **10.0 Technical Knowledge and Skills:** Apply essential technical knowledge and skills common to all pathways in the Manufacturing and Product Design sector, following procedures when carrying out experiments or performing technical tasks.
- **11.0 Demonstrate and apply the knowledge and skills contained in the Manufacturing and Product Design anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through career technical student organizations.**

**Graphic Production Technologies Pathway Standards:**

- **A1.0** Apply the basic graphic design principles to achieve effective visual communication.
- **A1.1** Identify the relationships between space, color, image, and content.
- **A1.2** Demonstrate the graphic design principles and the utilization of the grid system in applying those principles.
- **A2.0** Demonstrate an understanding of the psychology of color and color theory as it relates to visual communication.
- **A2.1** Understand the science of color spectrum and other aspects of color as it relates to hue, value, and chroma.
- **A2.2** Explain the differences between methods used to describe color, including cyan, magenta, yellow, black (CMYK) and red, green, blue (RGB).
- **A2.3** Produce a printed product in monotone and in multicolor.
- **A3.5** Produce a printed product that demonstrates the application of graphic design principles and color theory using desktop publishing and electronic imaging software.
- **A10.1** Employ various photographic technology, processes, and materials used in graphic design.
- **A11.1** Explore and apply animated effects to the elements of design, which include text, color, and imagery.

- **Brainstorming, ideation and documentation of key principles and technical information.**
- **Written assignments in the sketchbook include visual analyses of works of art and designed objects, giving students the opportunity to display critical thinking skills and visual literacy. The sketchbook is an important assessment tool for the teacher, exhibiting understanding of the process of creating, designing, and analyzing 3D art.**
- **CTSO Activities: Student Organization will be a Skate Club that will support the mission of this class, promote positive skateboarding practices, and participate in school and community service projects.**
**California Arts Standards for Visual Arts:**

- **Acc.VA:Cr1.1:** Individually or collaboratively formulate new creative problems based on students’ existing artwork.
- **Prof.VA:Cr1.1:** Use multiple approaches to begin creative endeavors.
- **Acc.VA:Cr2.1:** Through experimentation, practice, and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
- **Prof.VA:Cr3:** Apply relevant criteria from traditional and contemporary cultural contexts to examine, reflect on, and plan revisions for works of art and design in progress.
Unit 4: Design and Layout

Unit Description

Students will acquire the skills to choose unique design elements for projects wherein all the elements that make up the visual end product work in concert with the core purpose of the business. They will apply these skills to proportionally sketch a variety of engineering models and proportional shapes. Through lecture and reading assignments, students learn why sketching is an important step in the creation process in this age of computers. They will also experience the evolution of drawing as it relates to ideas, form, function and innovation. They will learn how to incorporate perspective and depth into sketches and acquire the vocabulary essential to communicate in the realm of art and engineering design. Students will develop their artistic perception and creative expression through the development of 5 basic drawing skills: 1) The perception of edges, 2) the perception of spaces, 3) the perception of relationships, 4) the perception of lights and shadows, 5) the perception of the whole. As students work through this unit, they will interpret the development of graphic language in relation to engineering design. They will begin the process of peer review critiques.

Unit Outline

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<tbody>
<tr>
<td>Students will…</td>
<td>1. What are the basics of layout and composition?</td>
<td></td>
</tr>
<tr>
<td>● Reading Standard: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. (CCSS.ELA-LITERACY.RLST.11-12.3)</td>
<td>● demonstrate ability to create a product using digital and non-digital tools.</td>
<td>2. How do we manage design space?</td>
</tr>
<tr>
<td>● Reading Standard: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. (CCSS.ELA-LITERACY.RLST.11-12.4)</td>
<td>● create a company and a product to market.</td>
<td>3. How can we recognize successful compositions used in various types of media?</td>
</tr>
<tr>
<td>● Writing Standard: Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic. (CCSS.ELA-LITERACY.W.11-12.2.D)</td>
<td>● demonstrate understanding of color, typography, and design and layout through completion of assignments.</td>
<td>4. What are the tools used in design and layout?</td>
</tr>
<tr>
<td>● Writing Standard: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. (CCSS.ELA-LITERACY.W.11-12.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Writing Standard: Gather relevant information from multiple authoritative print and digital sources using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source</td>
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</table>

Sample Performance Tasks/Assessments

- Working individually or in groups, students will begin to create a fictitious company. This company will produce a product, and using design tools provided, students will design marketing materials for both the company and the product.
- Create a design package including hand-drawn thumbnail sketches illustrating multiple options, and a rough draft showing the best option. Instructor will provide the information for your business. Produce a final digital layout. Project deliverables will include a business card, marketing flyer, and a brochure. All work submitted must comply with the use of good elements of design.
- Course Sketchbook: Students maintain a sketchbook throughout the year-long course, which serves as means to collect, record, and manage notes and materials for each project. This repository also serves as a resource.
and following a standard format for citation including footnotes and endnotes. (CCSS.ELA-LITERACY.W.11-12.8)

**Manufacturing and Product Development - Knowledge and Performance Anchor Standards:**

- **2.0 Communications:** Acquire and accurately use Manufacturing and Product Design sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.
- **4.0 Technology:** Use existing and emerging technology, to investigate, research, and produce products and services, including new information, as required in the Manufacturing and Product Design sector workplace environment.
- **5.0 Problem Solving and Critical Thinking:** Conduct short, as well as more sustained, research to create alternative solutions to answer a question or solve a problem unique to the Manufacturing and Product Design sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.
- **10.0 Technical Knowledge and Skills:** Apply essential technical knowledge and skills common to all pathways in the Manufacturing and Product Design sector, following procedures when carrying out experiments or performing technical tasks.

**Graphic Production Technologies Pathway Standards:**

- **A1.3** Create a basic layout applying images, text, and typography.
- **A3.3** Demonstrate how to produce single and multicolor images and know how to apply them across various types of printed products.
- **A3.4** Create a visually effective layout that communicates an intention using graphic software that integrates graphics, text, photographic imagery, and color.

for brainstorming, ideation and documentation of key principles and technical information.

- Written assignments in the sketchbook include visual analyses of works of art and designed objects, giving students the opportunity to display critical thinking skills and visual literacy. The sketchbook is an important assessment tool for the teacher, exhibiting understanding of the process of creating, designing, and analyzing 3D art.
- **CTSO Activities:** Student Organization will be a Skate Club that will support the mission of this class, promote positive skateboarding practices, and participate in school and community service projects.
- A3.5 Produce a printed product that demonstrates the application of graphic design principles and color theory using desktop publishing and electronic imaging software.
- A4.0 Demonstrate technical illustration and vector drawing skills.
- A11.2 Produce a visually dynamic communication project that applies animated effects to various elements of the design.
- A13.0 Understand and apply integrated graphic multimedia technologies, combining graphics, photographic imagery, motion graphics and animation, video, and special effects.
- A13.1 Apply design strategies in selecting graphic multimedia technologies to produce dynamic effective visual communication.
- A13.2 Practice the steps in producing an integrated graphic multimedia project designed to inform, teach, or sell.
- A13.3 Produce an integrated graphic multimedia project.
- A14.0 Identify the different industries that utilize graphic design and identify other potential business opportunities for graphic design applications.
- A14.1 Apply research methodologies and business and entrepreneurial principles to identify potential business opportunities to apply graphic and multimedia design.

**California Arts Standards for Visual Arts:**
- Acc.VA:Cr1.1: Individually or collaboratively formulate new creative problems based on students’ existing artwork.
- Prof.VA:Cr1.1: Use multiple approaches to begin creative endeavors.
- Acc.VA:Cr2.1: Through experimentation, practice, and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
- Prof.VA:Cr3: Apply relevant criteria from traditional and contemporary cultural contexts to examine, reflect on, and plan revisions for works of art and design in progress.
# Unit 5: The Digital Depiction of Design

## Unit Description

In this unit, students will go from concept sketches to computerized models. Students will be introduced to the concept of the “nonverbal language of art”. They will use sketches and models to communicate shapes and lines within a space. Using hand sketching and engineering modeling software, students will practice drawing the two-dimensional top, front and right-side planes of a three-dimensional object. Students will understand measurement systems as they apply to engineering design. They will learn the degree of accuracy necessary for engineering design.

## Unit Outline

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<td><strong>Common Core State Standards English Language Arts &amp; Literacy:</strong></td>
<td>Students will...</td>
<td>1. How is computer technology used to create designs and to effectively communicate ideas? 2. How can 3D design be utilized to enhance communication?</td>
</tr>
</tbody>
</table>
| ● **Reading Standard:** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. (CCSS.ELA-LITERACY.RLST.11-12.3) | ● demonstrate the ability to use 2D tools to draw conceptual designs.  
● transfer 2D images into 3D products.  
● demonstrate safety practices when using 3D printing technologies. | |
| ● **Reading Standard:** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. (CCSS.ELA-LITERACY.RLST.11-12.4) | | |
| ● **Writing Standard:** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (CCSS.ELA-LITERACY.W.11-12.4) | | |
| ● **Writing Standard:** Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. (CCSS.ELA-LITERACY.W.11-12.6) | | |

### Manufacturing and Product Development - Knowledge and Performance Anchor Standards:

- **4.0 Technology:** Use existing and emerging technology, to investigate, research, and produce products and services, including new information, as required in the Manufacturing and Product Design sector workplace environment.
- **6.0 Health and Safety:** Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the

## Sample Performance Tasks/Assessments

- Students will create a series of concept sketches using design technology.
- Using air clay, students will create several basic shape models. Through this, they will learn to use the features that are most often manipulated when creating 3D shapes. Students will set up relationships with each model and check clearances. They modify each part to resolve clearance issues.
- Students will utilize basic shape models, volume, and size constraints to produce a medallion that can be worn around the neck. The medallion will be 3D printed and used to assess students’ understanding of spatial awareness.
- **Course Sketchbook:** Students maintain a sketchbook throughout the year-long course, which serves as means to collect, record, and manage notes and materials for each project. This repository also serves as a resource for brainstorming, ideation and documentation of key principles and technical information.
- **Written assignments in the sketchbook include visual analyses of works of art and designed objects, giving students the opportunity to display critical thinking skills and visual literacy. The sketchbook is an important assessment tool for the teacher, exhibiting understanding of the process of creating, designing, and analyzing 3D art.”
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<tr>
<td>- 10.0 Technical Knowledge and Skills: Apply essential technical knowledge and skills common to all pathways in the Manufacturing and Product Design sector, following procedures when carrying out experiments or performing technical tasks.</td>
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<td>- 11.0 Demonstrate and apply the knowledge and skills contained in the Manufacturing and Product Design anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through career technical student organizations.</td>
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**Graphic Production Technologies Pathway Standards:**

- A3.5 Produce a printed product that demonstrates the application of graphic design principles and color theory using desktop publishing and electronic imaging software.
- A4.0 Demonstrate technical illustration and vector drawing skills.
- A4.1 Create technical illustration and vector drawings.
- A4.2 Convert and edit formats including encapsulated postscript (eps), drawing (dwg), and portable document file (pdf).
- A10.1 Employ various photographic technology, processes, and materials used in graphic design.
- A12.3 Produce a digital media project from a storyboard utilizing current production and postproduction technologies.
- A13.0 Understand and apply integrated graphic multimedia technologies, combining graphics, photographic imagery, motion graphics and animation, video, and special effects.
- A13.1 Apply design strategies in selecting graphic multimedia technologies to produce dynamic effective visual communication.
- A13.2 Practice the steps in producing an integrated graphic multimedia project designed to inform, teach, or sell.
- A13.3 Produce an integrated graphic multimedia project.

- CTSO Activities: Student Organization will be a Skate Club that will support the mission of this class, promote positive skateboarding practices, and participate in school and community service projects.
- A14.0 Identify the different industries that utilize graphic design and identify other potential business opportunities for graphic design applications.
- A14.1 Apply research methodologies and business and entrepreneurial principles to identify potential business opportunities to apply graphic and multimedia design.

**California Arts Standards for Visual Arts:**
- Acc.VA:Cr1.1: Individually or collaboratively formulate new creative problems based on students’ existing artwork.
- Prof.VA:Cr1.1: Use multiple approaches to begin creative endeavors.
- Acc.VA:Cr2.1: Through experimentation, practice, and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
- Prof.VA:Cr3: Apply relevant criteria from traditional and contemporary cultural contexts to examine, reflect on, and plan revisions for works of art and design in progress.
## Unit 6: Surface

### Unit Description

This unit focuses on the element of the surface. Students explore topics of texture, finish, light, shadow, color, balance, and composition. The primary goal of this assignment is to understand how to manipulate a surface by using a variety of approaches and tools. Formal concepts include composition, additive and subtractive sculptural processes, and translating positive to negative form. Technical skills employed in this assignment include plaster casting and sculpting with air-dry clay. Students also explore how imagery and formal elements communicate their conceptual intentions.

### Unit Outline

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<td>● Reading Standard: Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. (<a href="#">CCSS.ELA-LITERACY.RST.9-10.1</a>)</td>
<td>Students will…</td>
<td>1. How are an artist’s choices of media, technique, and composition determined?</td>
</tr>
<tr>
<td>● Reading Standard: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. (<a href="#">CCSS.ELA-LITERACY.RLST.11-12.3</a>)</td>
<td>● demonstrate ability to follow precise and detailed instructions.</td>
<td>2. How does the surface of an artistic product communicate the sculpture’s message?</td>
</tr>
<tr>
<td>● Writing Standard: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (<a href="#">CCSS.ELA-LITERACY.W.11-12.4</a>)</td>
<td>● utilize multiple mediums to create a specific artistic product.</td>
<td>3. How can different surface options evoke different messages when used on a similar piece of art?</td>
</tr>
</tbody>
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### Manufacturing and Product Development - Knowledge and Performance Anchor Standards:

| 4.0 Technology: Use existing and emerging technology, to investigate, research, and produce products and services, including new information, as required in the Manufacturing and Product Design sector workplace environment. | |
| 6.0 Health and Safety: Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Manufacturing and Product Design sector workplace environment. | |
| 10.0 Technical Knowledge and Skills: Apply essential technical knowledge and skills common to all pathways in the Manufacturing and Product Design sector, following procedures when carrying out experiments or performing technical tasks. | |

### Sample Performance Tasks/Assessments

- The project isolates the sculptural element of the surface through a relief sculpture, requiring all students to create a positive plaster cast from a clay mold of a set dimension. The clay negative of the cast is created first by carving, molding, and shaping a large clay slab.
- Students incorporate mixed media or 3D printed forms into the surface by embedding them, or by pressing into the clay to create a negative indentation in the surface. A positive of this form is then cast in plaster. This completed cast is finally treated with a finish which may include paint, graphite, shoe polish, or other surface treatment. Students discuss their completed projects in an in-class critique.
- Course Sketchbook: Students maintain a sketchbook throughout the year-long course, which serves as means to collect, record, and manage notes and materials for each project. This repository also serves as a resource for brainstorming, ideation and documentation of key principles and technical information.
- Written assignments in the sketchbook include visual analyses of works of art and designed objects, giving students the opportunity to display...
● 11.0 Demonstrate and apply the knowledge and skills contained in the Manufacturing and Product Design anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through career technical student organizations.

Graphic Production Technologies Pathway Standards:
● A1.0 Apply the basic graphic design principles to achieve effective visual communication.
● A1.1 Identify the relationships between space, color, image, and content.
● A10.0 Understand the analog and digital photographic applications.
● A10.1 Employ various photographic technology, processes, and materials used in graphic design.
● A10.2 Identify the visual characteristics and differences between analog and digital outputs.
● A11.2 Produce a visually dynamic communication project that applies animated effects to various elements of the design.
● A14.0 Identify the different industries that utilize graphic design and identify other potential business opportunities for graphic design applications.
● A14.1 Apply research methodologies and business and entrepreneurial principles to identify potential business opportunities to apply graphic and multimedia design.

California Arts Standards for Visual Arts:
● Acc.VA:Cr1.1: Individually or collaboratively formulate new creative problems based on students’ existing artwork.
● Prof.VA:Cr1.1: Use multiple approaches to begin creative endeavors.
● Acc.VA:Cr2.1: Through experimentation, practice, and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
● Prof.VA:Cr3: Apply relevant criteria from traditional and contemporary cultural contexts to examine, reflect on, and plan revisions for works of art and design in progress.

critical thinking skills and visual literacy. The sketchbook is an important assessment tool for the teacher, exhibiting understanding of the process of creating, designing, and analyzing 3D art.

● CTSO Activities: Student Organization will be a Skate Club that will support the mission of this class, promote positive skateboarding practices, and participate in school and community service projects.
### Unit 7: Form

#### Unit Description

This unit introduces students to the sculptural element of form. Through a series of assignments, students are introduced to formal questions of weight, proportion, scale, balance, positive/negative space, and composition. Students look at examples of sculpture and design in objects from across history and cultures. They examine the considerations and conceptual implications of these works in order to gain a better understanding of how form operates in 3D design. Important topics covered in this unit include relationship between form and function, how form communicates concept (in this assignment, a skateboard), and how choices in scale and material affect both formal and conceptual outcomes. Technical skills developed in this unit include sculpting with clay, CAD software, 3D printing, and application of surface treatments.

#### Unit Outline

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<td>● Reading Standard: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. (<a href="#">CCSS.ELA-LITERACY.RLST.11-12.3</a>)</td>
<td>Students will…</td>
<td>1. How does an artist decide which technique to use in order to convey a specific feeling or message?</td>
</tr>
<tr>
<td>● Writing Standard: Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic. (<a href="#">CCSS.ELA-LITERACY.W.11-12.2.D</a>)</td>
<td>● demonstrate understanding of structural art design.</td>
<td>2. How are an artist’s choices of media, technique, and composition determined?</td>
</tr>
<tr>
<td>● Writing Standard: Gather relevant information from multiple authoritative print and digital sources using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation including footnotes and endnotes. (<a href="#">CCSS.ELA-LITERACY.W.11-12.8</a>)</td>
<td>● create a prototype of a product using multiple mediums.</td>
<td>3. How might artist choices be reflected in branding or in a product?</td>
</tr>
</tbody>
</table>

#### Manufacturing and Product Development - Knowledge and Performance Anchor Standards:

- 9.0 Leadership and Teamwork: Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution as practiced in career technical student organizations.

#### Sample Performance Tasks/Assessments

- Students examine form by exploring the concept of function and physics through the development of a skateboard. This assignment allows students to explore how a sculptural form can reference a concept and reinforces skills in visual communication. Students also learn to work with CAD software and learn about the technical process of 3D printing. They will balance this use of technology with the acquisition of hand-skills in working with clay.
- Students sculpt three small forms in clay representing pieces of a skateboard. Students then scan one of these forms on the 3D scanner and use CAD software to manipulate the form through 2 iterations, printing them on the 3D printer.
- Course Sketchbook: Students maintain a sketchbook throughout the year-long course, which serves as means to collect, record, and manage notes and materials for each project. This repository also serves as a resource.
10.0 Technical Knowledge and Skills: Apply essential technical knowledge and skills common to all pathways in the Manufacturing and Product Design sector, following procedures when carrying out experiments or performing technical tasks.

11.0 Demonstrate and apply the knowledge and skills contained in the Manufacturing and Product Design anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through career technical student organizations.

Graphic Production Technologies Pathway Standards:

- A1.0 Apply the basic graphic design principles to achieve effective visual communication.
- A1.1 Identify the relationships between space, color, image, and content.
- A1.2 Demonstrate the graphic design principles and the utilization of the grid system in applying those principles.
- A2.0 Demonstrate an understanding of the psychology of color and color theory as it relates to visual communication.
- A3.5 Produce a printed product that demonstrates the application of graphic design principles and color theory using desktop publishing and electronic imaging software.
- A6.0 Apply the processes and procedures involved in producing image files for the reproduction of single-color and multicolor products.
- A6.1 Identify the variables that affect the image transfer process for reproduction.
- A6.2 Employ the process for creating image files that are appropriate for graphic design reproduction and specified printing requirements.
- A10.0 Understand the analog and digital photographic applications.
- A10.1 Employ various photographic technology, processes, and materials used in graphic design.
- A10.2 Identify the visual characteristics and differences between analog and digital outputs.

for brainstorming, ideation and documentation of key principles and technical information.

- Written assignments in the sketchbook include visual analyses of works of art and designed objects, giving students the opportunity to display critical thinking skills and visual literacy. The sketchbook is an important assessment tool for the teacher, exhibiting understanding of the process of creating, designing, and analyzing 3D art.

- CTSO Activities: Student Organization will be a Skate Club that will support the mission of this class, promote positive skateboarding practices, and participate in school and community service projects.
- A13.3 Produce an integrated graphic multimedia project.
- A14.0 Identify the different industries that utilize graphic design and identify other potential business opportunities for graphic design applications.
- A14.1 Apply research methodologies and business and entrepreneurial principles to identify potential business opportunities to apply graphic and multimedia design.

**California Arts Standards for Visual Arts:**
- Acc.VA:Cr1.1: Individually or collaboratively formulate new creative problems based on students’ existing artwork.
- Prof.VA:Cr1.1: Use multiple approaches to begin creative endeavors.
- Acc.VA:Cr2.1: Through experimentation, practice, and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
- Prof.VA:Cr3: Apply relevant criteria from traditional and contemporary cultural contexts to examine, reflect on, and plan revisions for works of art and design in progress.
Unit 8: The Design of Models and Prototypes

Unit Description
In this unit, students will continue to develop skills related to prototyping and model-making for product design. They will deepen their understanding of how static and working prototypes are developed from graphical representations. They will use engineering design equipment appropriately, accurately and safely. Students will gain competence in use of modeling software to create their 2D and 3D sketches. They will continue completing peer review critiques.

Unit Outline

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<td>Students will…</td>
<td>1. What type of reverse engineering makes the most sense for different applications?</td>
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<tr>
<td>• <strong>Reading Standard</strong>: Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. (CCSS.ELA-LITERACY.RST.9-10.1)</td>
<td>• understand the benefits of reverse engineering in design.</td>
<td>2. What parts of the original product have to be changed?</td>
</tr>
<tr>
<td>• <strong>Reading Standard</strong>: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. (CCSS.ELA-LITERACY.RLST.11-12.4)</td>
<td>• determine and experiment with individual style in design.</td>
<td>3. What parts of the original product should remain the same?</td>
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<tr>
<td>• <strong>Writing Standard</strong>: Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic. (CCSS.ELA-LITERACY.W.11-12.2.D)</td>
<td>• use reverse design thinking to reiterate creative works.</td>
<td></td>
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<td>• <strong>Writing Standard</strong>: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. (CCSS.ELA-LITERACY.W.11-12.6)</td>
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**Manufacturing and Product Development - Knowledge and Performance Anchor Standards:**

- 4.0 Technology: Use existing and emerging technology, to investigate, research, and produce products and services, including new information, as required in the Manufacturing and Product Design sector workplace environment.

**Sample Performance Tasks/Assessments**

- Students will use reverse engineering design to analyze the work of a product designer by taking apart an artifact. Students will write about and present the designer's style and will also identify how the designer used the elements of art and the principles of design in the creation of the artifact. Students will be required to identify possible artists that might have influenced the designer; students must provide evidence to support their findings.
- Create a prototype of the reverse-engineered design. Rework the model through the knowledge gained from routine student, teacher, and self-reviews and critiques.
- Course Sketchbook: Students maintain a sketchbook throughout the year-long course, which serves as means to collect, record, and manage notes and materials for each project. This repository also serves as a resource for brainstorming, ideation and documentation of key principles and technical information.
- Written assignments in the sketchbook include visual analyses of works of art and designed objects, giving students the opportunity to display critical thinking skills and visual literacy. The sketchbook is an important
7.0 Responsibility and Flexibility: Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the Manufacturing and Product Design sector workplace environment and community settings.

10.0 Technical Knowledge and Skills: Apply essential technical knowledge and skills common to all pathways in the Manufacturing and Product Design sector, following procedures when carrying out experiments or performing technical tasks.

11.0 Demonstrate and apply the knowledge and skills contained in the Manufacturing and Product Design anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through career technical student organizations.

Graphic Production Technologies Pathway Standards:

- A1.0 Apply the basic graphic design principles to achieve effective visual communication.
- A1.1 Identify the relationships between space, color, image, and content.
- A1.2 Demonstrate the graphic design principles and the utilization of the grid system in applying those principles.
- A2.0 Demonstrate an understanding of the psychology of color and color theory as it relates to visual communication.
- A3.0 Apply graphic design software and desktop publishing as a means of creating effective communication.
- A10.1 Employ various photographic technology, processes, and materials used in graphic design.
- A10.2 Identify the visual characteristics and differences between analog and digital outputs.
- A11.1 Explore and apply animated effects to the elements of design, which include text, color, and imagery.
- A11.2 Produce a visually dynamic communication project that applies animated effects to various elements of the design.
- A12.0 Demonstrate a proficiency in digital video production and the post-production process.

assessment tool for the teacher, exhibiting understanding of the process of creating, designing, and analyzing 3D art.

- CTSO Activities: Student Organization will be a Skate Club that will support the mission of this class, promote positive skateboarding practices, and participate in school and community service projects.
**California Arts Standards for Visual Arts:**

- **Acc.VA:Cr1.1:** Individually or collaboratively formulate new creative problems based on students’ existing artwork.
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- **Acc.VA:Cr2.1:** Through experimentation, practice, and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
- **Prof.VA:Cr3:** Apply relevant criteria from traditional and contemporary cultural contexts to examine, reflect on, and plan revisions for works of art and design in progress.