

CTE Pathway: Manufacturing and Product Development

Course Name: Graphic Arts Technology (2-Year Sequence)

Course Descriptions:

Graphic Arts Technology 1:

This course focuses on the introduction to the graphic art fields of digital and print media. Students will be introduced to graphic design, printing methods/processes, and desktop publishing using industry standard technology. Projects include digital imaging, vector graphics, typography, layout, and logo design in building a digital portfolio. Students will also be introduced to graphic arts careers, terminology, and the creative design process. Students will also start to turn their digital designs into print through digital printing and beginning screen printing. Printing projects will include flyers/brochures/posters, business cards, vinyl decals, and screen printed apparel.

Graphic Arts Technology 2:

In this course, students will develop a deeper understanding of the elements of graphic design, including color theory as well as further develop problem solving and critical thinking skills. This course will also focus on advanced techniques and production workflow management in a print shop setting using different commercial printing equipment and gaining more hands-on experience. Students will learn graphic arts business skills in planning and organizing print jobs as well as marketing and sales; furthermore, students will produce print jobs for “clients” in the school community. Print projects will include banners, printed canvas, customized mugs or mousepads, and advanced screen printed apparel.

Learning Objectives:

- Learn and apply principles of design to generate original designs.
- Utilize industry based graphic arts software to generate vector/print ready designs.
- Produce designs utilizing various printing techniques such as vinyl cutting/application and screen printing techniques.
- Create an original portfolio in order to pursue employment or college transfer opportunities.
- Collaborate effectively with project team members meeting deadlines and completing design/print jobs.
- Demonstrate an understanding and practical ability to complete an industry standard graphic design project from inception to completion.

Course Outlines:

Graphic Arts Technology 1 (GAT 1)

Unit 1: Class Orientation and Safety Rules

Students will be introduced to course expectations, structure, and assignments in general. Class safety procedures and rules will be introduced throughout the print shop tour. Students will continue to practice safety procedures as well as learn how to operate the equipment properly and safely throughout the course.

Unit 2: Introduction to Graphic Arts

Students will be introduced to the history of graphic design and printing and how they have evolved into graphic arts technology. In learning more about graphic arts, students will also learn about the different types of graphic arts careers as well as graphic arts terminology.

Unit 3: Fundamentals of Design

Fundamentals of Design is an understanding of the elements and principles of design that allow people to gain a deeper visual understanding of everyday graphic design. Throughout this unit, students will learn about the creative design process focusing on creativity and idea development. Students will also learn the importance of the use of typography in graphic design.

Unit 4: Digital Imaging

Digital Imaging unit is an introductory overview of Adobe Photoshop in which students will learn the tools and techniques to create various digital designs. Students will also learn different file formats and resolution for print vs web use. Some of the projects may include image manipulation/composite, creating a stencil from a photo, photo special effects, and event/movie poster design.

Unit 5: Vector Design

Vector Design unit is an introductory overview of Adobe Illustrator in which students will learn the tools and techniques to create various vector designs. Students will also be introduced to using a graphics tablet in creating their designs. In completing this unit, students will learn the difference between raster images and vector images in terms of file formats, Photoshop vs Illustrator, and the image resolution differences for certain print outputs. Some of the projects may include vector drawing, pattern design, and logo design.

Unit 6: Desktop Publishing and Layout

Desktop Publishing and Layout is an introductory overview of Adobe InDesign in which students will learn the tools and techniques in creating various publication materials; furthermore, students will learn how to set up the documents for design to print. Some of the projects may include magazine page layout, book cover design, flyer design, and business card design.

Unit 7: Beginning Printing Processes

Students will be introduced to beginning printing processes including small format digital printing on various types of paper, small vinyl decals, printing and cutting stickers, along with different methods of 1 color screen printing. Students will apply the various screen printing methods in printing apparel and various paper products.

Unit 8: Student Portfolio

Utilizing Weebly Web Designer, students will learn how to build a digital portfolio consisting of their work from the entire course. The portfolio will be the final project for this course and will also be expanded after completion of GAT 2 (Graphic Arts Technology 2).

Graphic Arts Technology 2 (GAT 2)

Unit 1: Class Orientation and Safety Rules

Students will be introduced to course expectations, structure, and assignments in general. A review of class safety procedures and rules will be introduced throughout the print shop tour. Students will continue to practice safety procedures as well as learn how to operate the equipment properly and safely throughout the course.

Unit 2: Advanced Design

In this unit, students will gain a deeper understanding of the fundamentals of design with an emphasis on color theory and more advanced design processes in graphic design. Students will also further develop problem solving and critical thinking skills throughout the creative design process. Students will be introduced to package design in creating product labels as well as ad design for advertisement banners. explore the difficulties of connecting different design elements with practical considerations of a project.

Unit 3: Advanced Photoshop

Advanced Photoshop is a deeper study of digital imaging in which students will be introduced to advanced techniques in Adobe Photoshop. In this unit, students learn advanced image composite and layer masking using a tablet, advanced photo effects and filters for canvas printing, along with creating duotones and halftone for screen printing. Students will also be introduced to basic photography techniques to utilize their own photos in their assignments.

Unit 4: Advanced Illustrator

Advanced Illustrator is a deeper study of vector based graphics in which students will be introduced to advanced techniques in Adobe Illustrator. In this unit, students will create vector based advertisements such as multicolor designs including banners along with how to set up color separations for screen printing.

Unit 5: Advanced InDesign

Advanced InDesign is a deeper study in layout and publishing in which students will be introduced to advanced techniques in Adobe InDesign. In this unit, students will learn how to set up and layout multiple page documents such as a brochure, 5 page or more magazine, and a newsletter or newspaper design. In creating their multiple page documents, students will learn how to use Photoshop, Illustrator, and InDesign as a working combination to save time, simplify workflow, and create high quality work.

Unit 6: Production Workflow

In this unit, students will examine the journey that a print job must take, from design to pre press to press, along with the roles and responsibilities of everyone involved. Students will learn how to manage the print production workflow in terms of planning and preparing print jobs utilizing Adobe Acrobat/PDF and the available print management software.

Unit 7: Large Format Printing

Using the various design assignments created throughout GAT 1 and GAT 2, students will learn about large format printing such as printing and finishing large scale banners, printing and stretching canvas, along with larger size vinyl for windows/doors.

Unit 8: Advanced Printing Techniques

Using the various design assignments created throughout GAT 2, students will learn advanced screen printing techniques printing in 2-4 colors using the emulsion image transfer technique for further printing on apparel as well as use HTV (Heat Transfer Vinyl) for printing on mugs and mouse pads.

Unit 9: Business Planning and Entrepreneurship

Using the GAT print shop, students will develop skills in running a business utilizing the skills and knowledge gained throughout GAT 1 and 2 as well as the print production workflow skills. Students will also develop skills in entrepreneur marketing and sales along with focusing on high-quality graphic printing and techniques for small business sales.

Unit 10: Portfolio

Utilizing Weebly Web Designer, students will continue building their digital portfolios consisting of their work from GAT 1 and GAT 2. The portfolio will be the final project for this course showcasing various digital designs that have transitioned to print form.



A. Graphic Production Technologies Pathway

The Graphic Production Technologies pathway provides students with an understanding of printing and manufacturing processes and systems common to careers in the graphic arts and printing technology industries. Representative topics include the principles of design composition, graphic design and layout, typography, image generation and file preparation, photography, digital imaging, prepress preparation, printing and screen printing technologies, binding and finishing processes, multimedia blending, business and entrepreneurship principles, prototype product design, computer-aided design, and computer-aided manufacturing.

Sample occupations associated with this pathway:

-  Animator; Computer-Designed Parts
-  Commercial Photographer
-  Digital/Graphic Artist; CAD/CAM Apprentice
-  Printing Press Operator
-  Production Assistant

- 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.
- 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.
- A3.0 Apply graphic design software and desktop publishing as a means of creating effective communication.
 - A3.1 Differentiate between and operate Macintosh (Mac) and personal computer (PC) platforms for development.
 - A3.2 Apply desktop publishing and electronic imaging software principles and processes used to prepare graphic design products.
 - 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.
- 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).
- A5.0 Adhere to the prepress process and procedures required to reproduce single-color and multicolor printing.
 - A5.1 Gain proficiency in applying the principles and processes used to prepare design work for the prepress phase of graphic design.
 - A5.2 Explain the differences in prepress for different output printing methods.
 - A5.3 Produce a printed product with the use of desktop publishing and electronic imaging software starting with the prepress phase through to reproduction.
- 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.
- A7.0 Develop a proficiency in applying the processes and procedures required for the reproduction of printed products and the image transfer process.
 - A7.1 Explain how various processes may be used to produce multiple-imaged copies.
 - A7.2 Identify the variables that affect the image transfer process.
 - A7.3 Produce a single-color and multicolor quality project applying the procedures and image transfer processes with a minimum of waste.
- A8.0 Understand various binding and finishing processes.
 - A8.1 Identify the variations, characteristics, and functions of binding and finishing operations in the production of printed products.
 - A8.2 Produce a bound and finished product such as a notepad, brochure, or booklet.
- A9.0 Demonstrate an understanding of the screen printing process.
 - A9.1 Identify the various applications of screen printing and the outcomes it produces.
 - A9.2 Identify materials and operations used in the screen printing process.



- A9.3 Identify the variables that affect the image and results of the screening process.
- A9.4 Produce a screen printed product on various substrates using appropriate inks and procedures.
- 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.
 - A10.3 Apply the principles of composition and lighting used in photography.
 - A10.4 Produce black-and-white and color images under natural and studio lighting conditions in both analog and digital output.
- A11.0 Apply various animation and motion graphic software to create dynamic visual communication outcomes.
 - 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 postproduction process.
 - A12.1 Identify the functions involved in the preproduction, production, and postproduction phases of video production.
 - A12.2 Apply digital video technology processes and procedures used in producing a multimedia project.
 - 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.
- 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 principals to identify potential business opportunities to apply graphic and multimedia design.