

Career & Technical Education | Arts & Communication

Digital Print Design

Subject Code: 340320

Outcome & Competency Descriptions

Course Description:

Starting with understanding target audiences, demographics, product shelf life, and sustainability, students create designs for two- or three-dimensional products. Using workflow processes, they lay out newsletters, posters, business cards, and other products. They create logo and package designs for corporate branding, marketing, and advertising. Critical thinking is engaged in multi-level critiques.

Strand 1. Business Operations / 21st Century Skills

Learners apply principles of economics, business management, marketing, and employability in an entrepreneur, manager, and employee role to the leadership, planning, developing, and analyzing of business enterprises related to the career field.

Outcome: 1.2. Leadership and Communications

Process, maintain, evaluate, and disseminate information in a business. Develop leadership and team building to promote collaboration.

Competencies

- 1.2.3. Identify and use verbal, nonverbal, and active listening skills to communicate effectively.
- 1.2.5. Communicate information (e.g., directions, ideas, vision, workplace expectations) for an intended audience and purpose.
- 1.2.6. Use proper grammar and expression in all aspects of communication.

Outcome: 1.7. Entrepreneurship/Entrepreneurs

Analyze the environment in which a business operates, and the economic factors and opportunities associated with self-employment.

Competencies

- 1.7.9. Conduct a self-assessment to determine entrepreneurial potential.
- 1.7.10. Describe techniques for obtaining experience (e.g., apprenticeship, co-operative [co-op] education, work placement, internship, job shadowing) related to an entrepreneurial objective.
- 1.7.13. Protect intellectual property and knowledge (e.g., copyright, patent, trademark, trade secrets, processes).

Outcome: 1.8. Operations Management

Plan, organize, and monitor an organization or department to maximize contribution to organizational goals and objectives.

Competencies

- 1.8.1. Forecast future resources and budgetary needs using financial documents (e.g., balance sheet demand forecasting, financial ratios).
- 1.8.2. Select and organize resources to develop a product or a service.
- 1.8.4. Identify alternative actions to take when goals are not met (e.g., changing goals, changing strategies, efficiencies).

Outcome: 1.10. Sales and Marketing

Manage pricing, place, promotion, packaging, positioning, and public relations to improve quality customer service.

Competencies

- 1.10.1. Identify how the roles of sales, advertising, and public relations contribute to a company's brand.
- 1.10.2. Determine the customer's needs and identify solutions.

Strand 2.

Design

Learners apply the elements and principles of design and compositional techniques to create works of art and visual layouts for both tactile and digital art forms.

Outcome: 2.1.

Arts Elements and Design Principles

Analyze works of art for the art elements and the design principles needed to create professional products.

Competencies

- 2.1.1. Describe art elements of line, value, color, shape, space, form, and texture in various media that are used individually or in combination.
- 2.1.2. Identify specific characteristics (i.e., positive and negative, organic, geometric, quality, weight, direction, variety, unity, balance, symmetry) of art elements that communicate and express ideas.
- 2.1.3. Determine how and when to apply the principles of design, including unity, variety, balance, movement, emphasis, visual hierarchy, and proportion/scale to communicate ideas.
- 2.1.4. Identify, compare, and contrast unity and variety within a design (e.g., formal/symmetrical, informal/asymmetrical, and radial balance).
- 2.1.5. Observe movement shown through repetition, pattern, and rhythm.
- 2.1.6. Interpret emphasis through contrast, isolation, size, and placement.
- 2.1.7. Identify visual hierarchy used to establish dominance.
- 2.1.8. Recognize the use of proportion/scale.

Outcome: 2.2.

Color Theory

Assess the use of color for commercial design.

Competencies

- 2.2.2. Choose color pairings with regard to ADA compliance, color visibility, readability, and accessibility.
- 2.2.3. Describe how changes to tint, shade, hue, value, intensity, and saturation relate to color theory.
- 2.2.5. Select color profiles for different mediums (e.g., Red Green Blue [RGB], Cyan Magenta Yellow Key [CMYK], Pantone®, Reference Output Medium Metric [ROMM] RGB, CIE-L*a*B* color space).
- 2.2.6. Replicate color across multiple media accommodating how color changes from the monitor to the final product (e.g., coated and uncoated papers, metallic, color-calibrated monitors).
- 2.2.8. Compare and contrast choices using the psychology of color.
- 2.2.9. Critique the use of color schemes (e.g., primary, secondary, tertiary, analogous, complementary, triads, monochromatic) in various media.

Outcome: 2.3.**Art Forms**

Apply art elements and design principles to create two-dimensional (2D) and three-dimensional (3D) commercial products using various media to communicate the message and evoke the desired audience response.

Competencies

- 2.3.5. Employ techniques that produce actual and implied texture (e.g., filters, embroidery, embossing, clay, wax, wood, metal).
- 2.3.6. Select the material based on its characteristics (e.g., design, construction, maintenance, care of product) for the intended use.
- 2.3.7. Create a 3D design according to specific measurements using drawing, cutting, scoring, and bonding techniques.

Outcome: 2.4.**Visual Layouts**

Create layouts for pre-production and analyze the communicative effects on the commercial product.

Competencies

- 2.4.2. Apply the proper color profile for the final output.
- 2.4.3. Create single and multi-color layouts using images and formats.
- 2.4.4. Use process color and spot color separations.
- 2.4.5. Differentiate between raster- and vector-based layouts.
- 2.4.6. Apply the components of a comprehensive layout (e.g., color scheme, font, white space, text graphics, frames, headings) according to an overall theme for the product.
- 2.4.7. Determine composition, formal qualities, scale, and use of space.
- 2.4.8. Apply compositional techniques, including rule of thirds, use of a grid system, 180-degree rule, framing, fill frame, pyramid, strong center of interest, and aspect ratio.
- 2.4.9. Create visual continuity among a variety of products.
- 2.4.11. Calculate finishing requirements in a layout (e.g., registration marks, bleed, slugs).
- 2.4.12. Evaluate the product in terms of the message or meaning for the targeted audience.

Outcome: 2.5.**Typography**

Apply typographical elements for a commercial presentation.

Competencies

- 2.5.1. Select typefaces for relevant applications.
- 2.5.2. Apply typography kerning, leading, and hierarchy for readability and accessibility.
- 2.5.3. Use typographic measurements in terms of picas, points, pixels, and ems.
- 2.5.4. Apply multiple families of type within a project.

- 2.5.5. Use typography as a primary component of logo design.
- 2.5.6. Determine the effect of various font types on operating systems.
- 2.5.7. Assess typography's effects on message delivery and aesthetics (e.g., limit families, readability).

Outcome: 2.6. UX/UI Design

Develop basic skills and knowledge of the UX/UI (User Experience/User Interface) design process.

Competencies

- 2.6.1. Understand the UX/UI design process (e.g. vision, journey mapping, wireframing, prototyping, strategizing) for the targeted platform (e.g. graphics, applications, programming).
- 2.6.2. Conduct and analyze research (focus testing, beta testing) with the end user in mind.
- 2.6.8. Draft, design, and utilize design prototypes (low-fidelity, high-fidelity) to guide the design process.
- 2.6.10. Understand how the use of appropriate iconography impacts user experience
- 2.6.11. Understand various design methodologies (Bottom-Up, Top-Down, Agile,) and evaluate their strengths and weaknesses.
- 2.6.12. Describe how attention, memory, perception, conditioning, and learning define the user experience and affects their actions.
- 2.6.13. Describe how usability heuristics develop a better experience for the end-user.

Strand 3.

Written Content Creation

Learners apply content creation knowledge and skills to use the intended message for entertainment, journalism, or marketing purposes.

Outcome 3.1.

Career-Based Writing

Develop basic skills and knowledge related to fact-, entertainment-, and marketing-based copy.

Competencies

3.1.10. Select visual imagery to support or enhance copy.

Strand 5. Print Production Process

Learners apply knowledge and skills to produce print or digital products.

Outcome: 5.1. File Preflight

Preflight files before printing.

Competencies

- 5.1.1. Input customer files from various sources (e.g. Dropbox, Google Drive, FTP, etc.) into a design application and process on a prepress system.
- 5.1.2. Compare the on-screen layout to the customer proof.
- 5.1.3. Create and manage page geometry for print production concerns including bleeds, trapping, pagination/imposition, screening, total ink coverage, and creating color separations.
- 5.1.4. Examine font and picture usage for mapping, alignment, linking, and resolution issues.
- 5.1.5. Identify color correction factors, including assignment, gamut, dot gain, screen angles, trapping, gray balance, and rich black.
- 5.1.6. Troubleshoot files using automated preflight tools and reports. Make recommended adjustments to files.
- 5.1.7. Confirm file accuracy through test printing or electronic approval.

Outcome: 5.5. Digital Print Methods

Analyze digital print technologies for digital and offset production.

Competencies

- 5.5.1. Explain printing technologies and uses, including laser, toner-based xerography, ink-based digital, wide-format, inkjet, direct-to-film, direct-to-garment, and UV (ultraviolet) printing.
- 5.5.2. Create digital masters for production, including offset and digital ink-based printing.
- 5.5.3. Analyze the raster image processor (RIP) / digital front end (DFE), including its functionality, purpose and significance in a digital printing workflow.
- 5.5.4. Identify the types of file formats that can be sent to a RIP/DFE for both static and variable print.

- 5.5.5. Determine proper planning for jobs and cost accounting for production for each method of printing.
- 5.5.6. Compare and contrast proofing techniques used in various printing technologies.
- 5.5.7. Compare the differences between colorants and substrates used in various printing technologies.
- 5.5.8. Identify substrate-related print quality issues as they relate to digital printing.
- 5.5.9. Identify the basic subsystems and the functions of the components of digital output devices.
- 5.5.10. Identify the different substrates available for replicating the master file/art.
- 5.5.11. Manage output product types for digital printing.
- 5.5.12. Determine artwork capabilities for reproduction.

Outcome: 5.6. Digital Production Printing

Produce digital print jobs on digital print systems.

Competencies

- 5.6.1. Use database software and text/graphics to create a variable data printing job.
- 5.6.2. Plan and execute a digital job, including reading and interpreting production information on a job docket/ticket, maintaining a checklist, and queuing a job.
- 5.6.3. Determine the proper output device according to job specifications.
- 5.6.4. Select finishing methods within the output software, including stitching, binding, folding, booklet-making, and hole-punching.
- 5.6.6. Print black-and-white and process-color jobs on coated and uncoated paper.
- 5.6.7. Analyze the capabilities of three-dimensional (3D) printing.
- 5.6.8. Understand advanced finishing techniques (e.g. varnishes, embossing, laminating, etc.)

Outcome: 5.8. Binding and Finishing

Evaluate post image transfer finishing methods and techniques.

Competencies

- 5.8.11. Assemble three-dimensional (3D) products (e.g., packaging, promotional and point-of-purchase displays, folders, pop-up books).

Strand 6. Digital Design

Learners apply knowledge and skills of digital design to manipulate and animate new and existing audio, video, or photo images to create graphics for internet, broadcast, mobile, and other multimedia applications.

Outcome: 6.1. Content Management

Import, store, export, and manage digital assets.

Competencies

- 6.1.8. Manage and archive digital assets through organizational techniques (e.g., metadata, keywords, file/folder structure, name conventions).

Outcome: 6.2. Scanning

Apply scanning techniques and procedures to capture images for design.

Competencies

- 6.2.1. Describe the relationship between lines per inch (LPI) and dots per inch (DPI).
- 6.2.2. Describe the relationship between resolution and file size.
- 6.2.3. Manipulate input functions, calibrate scanning equipment, save images in various formats, and scale, size, and adjust file resolution to scan images.

Outcome: 6.3. Graphics

Create and manipulate two-dimensional (2D) and three-dimensional (3D) digital graphics.

Competencies

- 6.3.1. Create digital graphics.
- 6.3.2. Manipulate the attributes of graphics (e.g., color, shape, size, texture, typography).
- 6.3.3. Arrange and manage graphics using layers.
- 6.3.4. Select a graphic file format based on compression, resolution, and file size.
- 6.3.5. Organize and export graphic files for intended use and platform.