**Course Description:**

Students analyze customer preferences to determine product creation, production and delivery. From a four-color vehicle wrap to a spot varnish that adds spark to an annual report cover, students learn techniques to enhance product uniqueness in the graphic arts industry. They compare the differences of customer impact between using traditional mass distribution to individual consumer targeting. Among strategies engaged are Variable Data Imaging (VDI), Quick Response (QR) codes and e-mail blasts.

**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 1.1. Employability Skills**

Develop career awareness and employability skills (e.g., face‐to‐face, online) needed for gaining and maintaining employment in diverse business settings.

**Competencies**

1.1.1. Identify the knowledge, skills and abilities necessary to succeed in careers.

1.1.2. Identify the scope of career opportunities and the requirements for education, training, certification, licensure and experience (e.g., interdependence of technical and artistic elements).

1.1.3. Develop a career plan that reflects career interests, pathways and secondary and postsecondary options.

1.1.4. Describe the role and function of professional organizations, industry associations and organized labor and use networking techniques to develop and maintain professional relationships.

1.1.6. Explain the importance of work ethic, accountability and responsibility and demonstrate associated behaviors in fulfilling personal, community and workplace roles.

1.1.8. Identify the correlation between emotions, behavior and appearance and manage those to establish and maintain professionalism.

1.1.9. Give and receive constructive feedback to improve work habits.

1.1.11. Recognize different cultural beliefs and practices in the workplace and demonstrate respect for them.

1.1.12. Identify healthy lifestyles that reduce the risk of chronic disease, unsafe habits and abusive behavior.

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

**Outcome 1.2. Leadership and Communications**

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

**Competencies**

1.2.1. Extract relevant, valid information from materials and cite sources of information (e.g., First Amendment, Freedom of Information Act).

1.2.6. Use proper grammar and expression in all aspects of communication.

1.2.7. Use problem-solving and consensus-building techniques to draw conclusions and determine next steps.

1.2.10. Use interpersonal skills to provide group leadership, promote collaboration and work in a team (e.g., writer, reporter, designer, director, actor, conductor, technical crew).

1.2.14. Use motivational strategies to accomplish goals.

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

**Outcome 1.3. Business Ethics and Law**

Analyze how professional, ethical and legal behavior contributes to continuous improvement in organizational performance and regulatory compliance.

**Competencies**

1.3.2. Follow protocols and practices necessary to maintain a clean, safe and healthy work environment.

1.3.3. Use ethical character traits consistent with workplace standards (e.g., honesty, personal integrity, compassion, justice).

1.3.5. Access and implement safety compliance measures (e.g., quality assurance information, safety data sheets [SDSs], product safety data sheets [PSDSs], United States Environmental Protection Agency [EPA], United States Occupational Safety and Health Administration [OSHA]) that contribute to the continuous improvement of the organization.

1.3.8. Verify compliance with computer and intellectual property laws and regulations.

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

**Outcome 1.4. Knowledge Management and Information Technology**

Demonstrate current and emerging strategies and technologies used to collect, analyze, record and share information in business operations.

**Competencies**

1.4.1. Use office equipment to communicate (e.g., phone, radio equipment, fax machine, scanner, public address systems).

1.4.2. Select and use software applications to locate, record, analyze and present information (e.g., word processing, e-mail, spreadsheet, databases, presentation, Internet search engines).

1.4.7. Use personal information management and productivity applications to optimize assigned tasks (e.g., lists, calendars, address books).

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**Outcome 1.5. Global Environment**

Evaluate how beliefs, values, attitudes and behaviors influence organizational strategies and goals.

**Competencies**

1.5.1. Describe how cultural understanding, cultural intelligence skills and continual awareness are interdependent.

1.5.3. Use cultural intelligence to interact with individuals from diverse cultural settings.

1.5.5. Recognize the ways in which bias and discrimination may influence productivity and profitability.

1.5.6. Analyze work tasks for understanding and interpretation from a different cultural perspective.

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**Outcome 1.6. Business Literacy**

Develop foundational skills and knowledge in entrepreneurship, financial literacy and business operations.

**Competencies**

1.6.1. Identify business opportunities.

1.6.2. Assess the reality of becoming an entrepreneur, including advantages and disadvantages (e.g., risk versus reward, reasons for success and failure).

1.6.4. Identify types of businesses, ownership and entities (i.e., individual proprietorships, partnerships, corporations, cooperatives, public, private, profit, not-for-profit).

1.6.5. Describe organizational structure, chain of command, the roles and responsibilities of the organizational departments and interdepartmental interactions.

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

**Outcome 1.7. Entrepreneurship/Entrepreneurs**

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

**Competencies**

1.7.7. Create a list of personal strengths, weaknesses, skills and abilities needed to be successful as an entrepreneur.

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.

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**Outcome 1.8. Operations Management**

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

**Competencies**

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).

1.8.8. Identify routine activities for maintaining business facilities and equipment.

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

**Outcome 1.10. Sales and Marketing**

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

**Competencies**

1.10.2. Determine the customer's needs and identify solutions.

1.10.8. Use promotional techniques to maximize sales revenues (e.g., advertising, sales promotions, publicity, public relations).

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**Outcome 1.11. Principles of Business Economics**

Examine and employ economic principles, concepts and policies to accomplish organizational goals and objectives.

**Competencies**

1.11.7. Describe how economic performance and culture are interdependent.

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

 **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. Art 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) 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. Compare and contrast unity and variety within a design.

2.1.5. Contrast formal/symmetrical, informal/asymmetrical and radial balance.

2.1.6. Observe movement shown through repetition, pattern and rhythm.

2.1.7. Interpret emphasis through contrast, isolation, size and placement.

2.1.8. Identify visual hierarchy used to establish dominance.

2.1.9. Recognize the use of proportion/scale.

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

**Outcome 2.2. Color Theory**

Assess the use of color for commercial design.

**Competencies**

2.2.1. Explain the science of color perception using the electromagnetic spectrum.

2.2.2. Analyze position in color theory models (e.g., color wheel; Munsell’s design relationship among chroma/intensity, value/lightness and hue).

2.2.3. Describe how changes to tint, shade, hue, value, intensity and saturation relate to color theory.

2.2.4. Identify gamut output issues and calibrate color.

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 mediums accommodating how color changes from the monitor to the final product (e.g., coated and uncoated papers, metallic, color-calibrated monitors).

2.2.7. Compare and contrast additive and subtractive color theory (e.g., RGB, CMYK).

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.

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

**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.

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| Pathways |  | Media Arts |  | Performing Arts | X | Visual Design |

**Outcome 2.4. Visual Layouts**

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

**Competencies**

2.4.1. Create thumbnail and rough sketches.

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.

2.4.10. Determine how the technical characteristics of the print medium affect content and style.

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.

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| Pathways |  | Media Arts |  | Performing Arts | X | Visual Design |

**Outcome 2.5. Typography**

Apply typographical elements for a commercial presentation.

**Competencies**

2.5.1. Select typefaces (e.g., serif, sans serif).

2.5.3. Use typographic measurements in terms of picas, points, pixels and ems.

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).

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| Pathways |  | Media Arts |  | Performing Arts | X | Visual Design |

**Strand 3. Written Content Creation**

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

**Outcome 3.4. Market-based Writing**

Write concise, creative, memorable, sellable copy for advertising, public relations and proposals.

**Competencies**

3.4.1. Research and analyze trends and local markets for opportunities.

3.4.9. Critique advertisements to ensure the achievement of goals and objectives.

3.4.10. Apply channels of direct mail, online, email, Web and social media strategies.

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

**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. Load customer files on a prepress system and open in a design application.

5.1.2. Compare the on-screen layout to the customer proof.

5.1.3. Examine the page format for production or output issues, including pagination, bleeds, folds, imposition, total ink coverage and 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.

5.1.7. Confirm file accuracy through test printing.

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**Outcome 5.2. File Output**

Output files for print production.

**Competencies**

5.2.1. Determine the resolution of the output device.

5.2.2. Apply color management through a calibrated system.

5.2.3. Manage output factors, including file management and raster image processing.

5.2.4. Interpret printers’ marks.

5.2.5. Verify that imagesetter materials and settings are correct.

5.2.6. Compare image carrier generation methods, including computer-to-plate [CTP], film based, screen and flexography.

5.2.7. Analyze factors for image carrier issues, including depleted chemistry and light leak.

5.2.8. Check color separations.

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

**Outcome 5.3. Offset Image Control Systems**

Set up substrate and image control systems for printing.

**Competencies**

5.3.1. Describe substrate transport pathways.

5.3.2. Apply color matching specifications for industry recognized systems.

5.3.3. Maintain conductivity and pH levels for offset printing.

5.3.4. Set up and adjust register systems.

5.3.5. Maintain image density and coverage.

5.3.6. Compare drying methods, including heat, oxidation, ultraviolet [UV], additives and infrared.

5.3.7. Preserve image carriers.

5.3.8. Select ink types based on their properties and product specifications.

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**Outcome 5.4. Printed Images**

Create printed images according to the client’s approved proof.

**Competencies**

5.4.1. Compare and contrast color density proofs and press sheets for offset, wide-format inkjet and laser formats using visual and equipment readings.

5.4.2. Interpret color bars.

5.4.3. Analyze the effects of single-color and multiple-color (e.g., Pantone®, spot color) output on various substrates (e.g., paper, plastic, recycled materials).

5.4.4. Analyze the effects of process color output on various substrates (e.g., paper, plastic, recycled materials).

5.4.5. Analyze and maintain print quality controls for offset, wide-format inkjet and laser formats.

5.4.6. Produce copies following project specifications.

5.4.7. Identify the image quality factors that are measured by a densitometer and a spectrophotometer and other quality control devices.

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**Outcome 5.5. Digital Print Methods**

Analyze digital print technologies for digital and offset production.

**Competencies**

5.5.1. Identify digital printing technologies and uses, including laser, toner-based xerography, ink-based digital and wide-format inkjet.

5.5.2. Create digital masters for production, including offset and digital ink-based printing.

5.5.3. Analyze the raster image processor (RIP), 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.

5.5.5. Compare digital printing to offset printing.

5.5.6. Compare and contrast proofing techniques used in digital and offset printing technologies.

5.5.7. Compare the differences between colorants and substrates used in digital printing versus offset printing.

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.

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**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, folding, booklet-making and hole-punching.

5.6.5. Manage output product types for digital printing.

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.

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**Outcome 5.7. Screen Printing and Embroidery**

Engage screen printing and embroidery operations.

**Competencies**

5.7.1. Identify substrates and their marketable applications in screen printing and embroidery.

5.7.2. Compare the differences in screen printing inks and embroidery threads.

5.7.3. Adjust the factors that determine the quality of the impression (e.g., angle, pressure, speed, composition).

5.7.4. Compare light-emitting diode (LED) lamps to medium-pressure mercury lamps and select the lamp for the given screen printing purpose.

5.7.5. Explain image digitization for embroidery purposes.

5.7.6. Explain stitch count and hoop size, using embroidery software.

5.7.7. Perform maintenance on embroidery machines.

5.7.8. Create final print materials for screen printing and embroidery and verify printing quality.

5.7.9. Dry or cure printed objects for screen printing projects.

5.7.10. Reclaim screens and waste materials for screen printing projects.

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**Outcome 5.8. Binding and Finishing**

Evaluate post image transfer finishing methods and techniques.

**Competencies**

5.8.1. Identify post image transfer finishing requirements.

5.8.2. Describe and identify inline- and offline-finishing systems.

5.8.3. Explain specifications for folding and using mockups.

5.8.4. Fold products, using single-, letter- and tri-fold.

5.8.5. Score and perforate products.

5.8.6. Bind products through drilling, perfect binding and saddle and flat stitching techniques.

5.8.7. Finish a saddle-stitched product through in-line, near-line and off-line methods.

5.8.8. Identify requirements for padding.

5.8.9. Apply specialty finishing processes, including thermography, foil stamping, embossing and die cutting.

5.8.10. Calculate basic paper cuts and strategies.

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

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

**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**

6.1.3. Select an application according to its capabilities in meeting the purpose and budget.

6.1.4. Import media into the selected application.

6.1.6. Convert file formats for use in editing software and other applications.

6.1.7. Export media in the appropriate format for delivery.

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| Pathways | X | Media Arts | X | Performing Arts | X | Visual Design |

**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 and calibrate scanning equipment (e.g., descreening, gamma, resolution).

6.2.4. Scan images.

6.2.5. Save images in various modes, resolutions and formats.

6.2.6. Scale, size and adjust file resolution for multiple uses.

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**Outcome 6.3. Graphics**

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

**Competencies**

6.3.1. Draw digital graphics.

6.3.2. Manipulate the attributes of graphics (e.g., color, shape, size, texture).

6.3.3. Arrange graphics using layers.

6.3.4. Select a graphic file format based on compression, resolution and file size.

6.3.5. Optimize and export graphic files for intended use.

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