

# Instructional Framework

Digital Printing  
10.0200.20



## Domain 1: Production Process

### Instructional Time: 40-50%

#### STANDARD 7.0 ENGAGE IN PRE-PRODUCTION/PLANNING PHASE OF PRODUCT CREATION IN DIGITAL PRODUCTION PRINTING

7.1 Define the market sectors of Print and how some of the products can be used in cross media for business and industry (e.g., magazines that use QR Codes to connect with interactive web sites)	<ul style="list-style-type: none"><li>• QR Codes for interactive media</li><li>• Market Sector and product</li></ul>
7.2 Identify the prepress software applications used in digital file preparation for print to include page layout, image creation, image manipulation, imposition, and pre-flight	<ul style="list-style-type: none"><li>• Industry standard software</li><li>• Page Layout</li><li>• Preflight software</li><li>• Package</li></ul>
7.3 Understand portable document format (PDF) workflow from design to generating the image carrier needed to print on either digital or analog presse	<ul style="list-style-type: none"><li>• PDF</li><li>• Embedding</li><li>• RIP Software</li></ul>
7.4 Identify the different image carriers used for the major printing processes to include right reading and wrong reading image transfer for analog presses	<ul style="list-style-type: none"><li>• Relief</li><li>• Planography</li><li>• Intaglio</li><li>• Pourse</li><li>• Impactless</li></ul>
7.5 Describe additive color theory for making digital files or printing plates	<ul style="list-style-type: none"><li>• RGB</li><li>• 0 - 255</li><li>• Light Theory</li><li>• Hexadecimal</li></ul>
7.6 Describe subtractive color theory used in process color printing	<ul style="list-style-type: none"><li>• CMYK</li><li>• 0 - 100%</li></ul>
7.7 Differentiate between the color gamuts: RGB, CMYK, Spot Color, grayscale and hex color, and explain how they relate to printing versus the Internet and web applications	<ul style="list-style-type: none"><li>• Web Safe Colors (216)</li></ul>
7.8 Demonstrate an understanding of the differences between vector and raster images and the different file formats used in prepress production	<ul style="list-style-type: none"><li>• Industry Standard Software</li><li>• SVG</li></ul>
7.9 Explain image trapping and why it is necessary for image registration on the printing press	<ul style="list-style-type: none"><li>• Registration</li><li>• Crop</li></ul>

	<ul style="list-style-type: none"> <li>• Bleed</li> </ul>
7.10 Present a workflow outline for a project from start to finish on both digital and analog presses	<ul style="list-style-type: none"> <li>• Pre-Production</li> <li>• Production</li> <li>• Post Production</li> </ul>
7.11 Explain the purpose of proofing and the difference between hard and soft proofs	<ul style="list-style-type: none"> <li>• Computer Soft Proof</li> <li>• Spelling and Accuracy</li> </ul>
7.12 Describe the six major printing processes used in industry and give advantages and disadvantages to each of the following processes: offset lithography, gravure, flexography, screen printing, digital, and inkjet	<ul style="list-style-type: none"> <li>• Advantages and Disadvantages</li> </ul>
7.13 List examples of the products typically produced by each of the major printing processes	<ul style="list-style-type: none"> <li>• Newspaper</li> <li>• Magazine</li> <li>• Variable Printing</li> <li>• POP</li> </ul>
7.14 Understand and interpret production information on a job ticket for print production	<ul style="list-style-type: none"> <li>• Job Ticket</li> </ul>
7.15 Plan and prepare an offset plate using digital equipment	<ul style="list-style-type: none"> <li>• Digital Darkroom</li> <li>• Color Separation</li> </ul>
7.16 Describe the differences between static digital printing and variable data digital printing	<ul style="list-style-type: none"> <li>• Database Management</li> </ul>
7.17 Select the appropriate paper for a job, including analyzing parent sizes, environmental concerns, grades and classes and reading a paper swatch	<ul style="list-style-type: none"> <li>• Substrates</li> <li>• Sizes</li> <li>• Weight</li> </ul>
7.18 Describe web-to-print technology with the submission of a client's print job through a web browser portal	<ul style="list-style-type: none"> <li>• FTP</li> <li>• Digital Clearing House</li> </ul>
<b>STANDARD 8.0 IMPLEMENT PLAN(S) FOR ACQUIRING OR CREATING A PRODUCT IN ACCORDANCE WITH PRODUCTION PHASE TASKS IN DIGITAL PRODUCTION PRINTING</b>	
8.1 Demonstrate basic safety procedures when running the press, such as removing jewelry, tying long hair back, etc.	<ul style="list-style-type: none"> <li>• OSHA</li> <li>• Workplace Skills</li> <li>• ADA</li> <li>• MSDS</li> </ul>
8.2 Identify and make operational the basic press systems for the different printing processes, to include the six basic systems for offset lithography: feeder, registration, main printing unit, dampening, inking, and delivery	<ul style="list-style-type: none"> <li>• Feeder</li> <li>• Registration</li> <li>• Printing</li> <li>• Dampening</li> <li>• Inking</li> <li>• Delivery</li> </ul>

8.3 Register all image elements and obtain the correct ink density during the press operation	<ul style="list-style-type: none"> <li>• Registration Marks</li> <li>• Fold Marks</li> <li>• Trim Marks</li> <li>• Density</li> </ul>
8.4 Produce single and multi-color projects	<ul style="list-style-type: none"> <li>• Color Separation</li> <li>• Single Color</li> </ul>
8.5 Demonstrate a working knowledge of the color bars, the densitometer, and other quality control targets and procedures	<ul style="list-style-type: none"> <li>• Color Bars</li> <li>• Registration Marks</li> <li>• Fold Marks</li> <li>• Trim Marks</li> <li>• Density</li> </ul>
8.6 Queue a job to the RIP and print the required number of impressions per the job ticket and for a specific operating system, a print driver, and digital printing press	<ul style="list-style-type: none"> <li>• Job Ticket</li> <li>• RIP</li> <li>• Print Driver</li> </ul>
8.7 Use a commercial personalization and database software application to create a variable data printing job	<ul style="list-style-type: none"> <li>• Variable Print</li> <li>• Target Market</li> </ul>
8.8 Demonstrate safe use of solvents, chemicals, and proper housekeeping practices for a safe work environment	<ul style="list-style-type: none"> <li>• MSDS</li> <li>• Hazard Signage</li> <li>• Hazard Colors</li> <li>• Personal Safety Equipment</li> <li>• Fire and Hazardous Storage Locker</li> </ul>
8.9 Demonstrate environmental considerations to include recycling paper waste and using proper disposal of inks and solvents	<ul style="list-style-type: none"> <li>• Hazardous Material Disposal</li> <li>• Recycling</li> <li>• Green Industry</li> </ul>
8.10 Locate and interpret Material Safety Data Sheets (MSDS)	<ul style="list-style-type: none"> <li>• Governing Body</li> <li>• Safety Compliance</li> <li>• Workman's Compensation</li> <li>• Right To Know</li> </ul>
8.11 Clean press after production and perform necessary maintenance to keep the presses operational	<ul style="list-style-type: none"> <li>• Housekeeping Duties</li> <li>• Periodic Maintenance</li> <li>• Maintenance Contracts</li> <li>• Lockout and Tagout</li> </ul>
<b>STANDARD 9.0 PERFORM TASKS IN POST-PRODUCTION PHASE OF PRODUCT REFINEMENT IN DIGITAL PRODUCTION PRINTING</b>	
9.1 Calculate paper cuts, and (if possible) program a paper cutter to trim a printed job	<ul style="list-style-type: none"> <li>• Industry Math</li> <li>• Cutter Safety</li> <li>• Blade Sharpening</li> </ul>

9.2 Perform bindery operation(s) per production requirements on the job ticket, to include folding, stitching, collating, drilling, padding, embossing, trimming, and creasing	<ul style="list-style-type: none"> <li>• Job Ticket</li> <li>• Added Value (Post Printing)</li> </ul>
9.3 Demonstrate how a product benefits from utilizing cross media including variable data digital printing, QR Codes that drive the consumer to an Internet website using mobile cell phones, and Augmented Reality (AR)	<ul style="list-style-type: none"> <li>• Aurasma - AR</li> <li>• QR Code</li> <li>• Variable Data</li> </ul>
9.4 Collect samples of all production work, prepare billing statements using trade customs, and archive or database all customer files for future production or reruns.	<ul style="list-style-type: none"> <li>• Storage</li> <li>• Record Keeping</li> <li>• Short-Term/Long-Term</li> </ul>
<b>STANDARD 11.0 MONITOR QUALITY ASSURANCE OF PRODUCT CREATION CONCURRENT WITH ALL PHASES OF PRODUCTION IN DIGITAL PRODUCTION PRINTING</b>	
11.1 Conduct color and production evaluations with customers prior to the production run, secure signature approvals of clients, and sequentially retain all correction data	<ul style="list-style-type: none"> <li>• Copyright</li> <li>• Pre-Production Quality Control</li> <li>• Contract</li> </ul>
11.2 Review a project workflow after completion and determine areas of improvement	<ul style="list-style-type: none"> <li>• Total Quality Management (TQM)</li> </ul>

<b>Domain 2: Digital Skills</b>	
<b>Instructional Time 25-35%</b>	
<b>STANDARD 5.0 UTILIZE COMPUTER APPLICATIONS TO MANAGE MEDIA</b>	
5.1 Use appropriate electronic publishing software and output devices	<ul style="list-style-type: none"> <li>• Industry Standard Software</li> </ul>
5.2 Apply essential commands and knowledge of computer operating systems	<ul style="list-style-type: none"> <li>• Keyboard Shortcuts (MAC or PC)</li> </ul>
5.3 Apply computer file management techniques	<ul style="list-style-type: none"> <li>• File Extensions</li> <li>• Safe Web</li> <li>• Archive</li> <li>• Compressed Files</li> <li>• ZIP</li> </ul>
5.4 Use the Internet for file transfer	<ul style="list-style-type: none"> <li>• FTP</li> <li>• Cloud Storage</li> </ul>
5.5 Select the format for digital delivery	<ul style="list-style-type: none"> <li>• File Format for Print</li> <li>• File Format for Web</li> <li>• Dropbox, Google Drive</li> </ul>
5.6 Use and care for equipment and related accessories	<ul style="list-style-type: none"> <li>• Longevity</li> <li>• Profit and Loss</li> <li>• Contract</li> </ul>

5.7 Describe the functionality of the internet, intranet, and extranet in the media environment	<ul style="list-style-type: none"> <li>• Social Media</li> <li>• Cloud Computing/Storage</li> <li>• Accessibility</li> </ul>
5.8 Explain methods of protecting a computer against computer threats	<ul style="list-style-type: none"> <li>• Anti Virus</li> <li>• Malware</li> <li>• Phishing</li> <li>• Employee Responsibility</li> </ul>
<b>STANDARD 6.0 APPLY KNOWLEDGE OF DATA CAPTURE AND MANIPULATION</b>	
6.1 Identify software that supports data capture for media devices (i.e., digital camera, video input device, graphics tablet, graphics expansion boards)	<ul style="list-style-type: none"> <li>• Twain</li> <li>• Image Capture</li> </ul>
6.2 Select appropriate resolutions for data capture	<ul style="list-style-type: none"> <li>• Web and Display</li> <li>• Low Level Print</li> <li>• High Quality Print</li> <li>• PPI vs DPI</li> </ul>
6.3 Capture and transfer still image, audio, and moving image content	<ul style="list-style-type: none"> <li>• File Format Extensions</li> </ul>
6.4 Archive and manage data for media applications	<ul style="list-style-type: none"> <li>• Internal File Storage</li> <li>• External File Storage</li> <li>• Security</li> <li>• Cloud Storage</li> <li>• File Backup</li> </ul>
<b>STANDARD 10.0 DELIVER/DISTRIBUTE PRODUCT(S) USING VARIOUS MEDIA IN ACCORDANCE WITH CONSUMER EXPECTATIONS IN DIGITAL PRODUCTION PRINTING</b>	
10.1 Create Quick Response Codes (QR codes) using commercial applications to connect the print job to an interactive web site that may include video	<ul style="list-style-type: none"> <li>• QR Code Uses</li> <li>• QR Code Generation</li> <li>• POP</li> </ul>
10.2 Use commercial software to create Personal URL's (PURL's) that create a marketing campaign for a client	<ul style="list-style-type: none"> <li>• PURL Marketing</li> </ul>
10.3 Print appropriate mail codes (Barcodes) or work with the US Postal Service to organize bulk mailing	<ul style="list-style-type: none"> <li>• USPS Standards and Regulations</li> </ul>
10.4 Package a file for future printing, to include fonts and necessary color correction	<ul style="list-style-type: none"> <li>• Industry Standard Software</li> <li>• Color Calibration of Equipment (ICC)</li> </ul>
10.5 Produce a car wrap, door wrap, etc., using ink jet technology or print textile shirts using screen printing	<ul style="list-style-type: none"> <li>• Non Traditional Substrates</li> </ul>
10.6 Describe production of printable electronics using gallium diodes for sources of illumination or RFID codes to track customer products	<ul style="list-style-type: none"> <li>• Industry Trends for Consumers</li> </ul>

## Domain 3: Communication Skills

**Instructional Time: 15-20%**

### STANDARD 3.0 DEMONSTRATE VERBAL AND NONVERBAL COMMUNICATION SKILLS REQUIRED BY THE MEDIA INDUSTRY

3.1 Use industry terminology appropriately in the work environment	<ul style="list-style-type: none"><li>• Industry Vocabulary</li></ul>
3.2 Use effective communication techniques to obtain accurate information from sources, audiences, and clients	<ul style="list-style-type: none"><li>• Active Listening</li><li>• Phone Skills</li><li>• Email Etiquette</li></ul>
3.3 Practice verbal and nonverbal communication skills with people of diverse cultures, generations, and situations	<ul style="list-style-type: none"><li>• Target Audience</li><li>• Diversity</li><li>• Body Language</li><li>• Cultural Sensitivity</li></ul>
3.4 Practice active listening skills appropriate to the medium/media	<ul style="list-style-type: none"><li>• Eye Contact</li><li>• Hand Shake</li><li>• Rephrase</li><li>• Acknowledgement</li></ul>

### STANDARD 4.0 DEMONSTRATE WRITTEN COMMUNICATION SKILLS REQUIRED BY THE MEDIA INDUSTRY

4.1 Use professional etiquette for web-, email-, and social-media-based communications	<ul style="list-style-type: none"><li>• Public vs Private</li></ul>
4.2 Conduct formal and informal research to collect information	<ul style="list-style-type: none"><li>• Research Library</li><li>• Internet</li></ul>
4.3 Verify the accuracy of information	<ul style="list-style-type: none"><li>• Client Interview</li></ul>
4.4 Verify the authority of sources	<ul style="list-style-type: none"><li>• Fact Check</li><li>• Multiple Sources</li></ul>
4.5 Identify the purpose, content, and audience for communications	<ul style="list-style-type: none"><li>• Who, What, Where, When, Why and How</li></ul>
4.6 Select the appropriate medium/media for distribution of communications	<ul style="list-style-type: none"><li>• Based on Cost</li><li>• Based on Product</li><li>• Audience</li></ul>
4.7 Format communications for the purpose, audience, and medium/media	<ul style="list-style-type: none"><li>• Marketing research</li><li>• Cost Analysis</li></ul>
4.8 Use editing skills when reviewing communications	<ul style="list-style-type: none"><li>• Dictionary</li><li>• Thesaurus</li><li>• Grammar Check</li></ul>
4.9 Use proofing skills and check the spelling when reviewing communications	<ul style="list-style-type: none"><li>• Proofreaders Marks</li></ul>

<b>STANDARD 12.0 PRESENT PRODUCT(S) TO SELECTED AUDIENCE(S) USING MEDIA IN DIGITAL PRODUCTION PRINTING</b>	
12.1 Describe why print is no longer a commodity, but rather a personalized product that delivers value to clients through variable data printing that has multiple touch points	<ul style="list-style-type: none"> <li>• Customization</li> <li>• Rapid Adaptability</li> <li>• Multi Platform</li> </ul>
12.2 Demonstrate the use of QR codes on a printed product like a brochure that takes the audience to an interactive website	<ul style="list-style-type: none"> <li>• Timeliness</li> <li>• Up-to-date</li> <li>• Relevant</li> </ul>
12.3 Demonstrate Google Analytics related to a marketing campaign that involves, variable data print, PURLs, QR codes, and the customer's Interactive Website	<ul style="list-style-type: none"> <li>• Data Driven Marketing</li> <li>• Variable Data</li> <li>• PURLs</li> <li>• QR Codes</li> </ul>
12.4 Print Radio Frequency Identification Codes (RFID) to demonstrate inventory control or tracking of products	<ul style="list-style-type: none"> <li>• Warehouse Inventory</li> <li>• Inventory Control Systems</li> </ul>

## **Domain 4: Practice & Ethics**

**Instructional Time: 5-10%**

<b>STANDARD 1.0 ANALYZE THE MEDIA INDUSTRY, ITS BUSINESS PRACTICES, AND ITS ROLE IN THE ECONOMY</b>	
1.1 Research the role of the media industry and its impact on society and the economy	<ul style="list-style-type: none"> <li>• Print</li> <li>• TV</li> <li>• Web</li> <li>• Radio</li> <li>• Social Media</li> </ul>
1.2 Investigate the history and evolution of media and emerging technology	<ul style="list-style-type: none"> <li>• Prehistoric</li> <li>• Influence by China</li> <li>• Guttenberg</li> <li>• Digital Print</li> </ul>
1.3 Identify factors that contribute to the success of media businesses and freelance/contract providers	<ul style="list-style-type: none"> <li>• Adaptability</li> <li>• Copyright</li> <li>• Fast Turnaround</li> </ul>
1.4 Examine the impact of social media on the media industry	<ul style="list-style-type: none"> <li>• Rapid Change</li> <li>• Facebook</li> <li>• Twitter</li> </ul>
1.5 Identify key factors to be considered in launching a media business	<ul style="list-style-type: none"> <li>• Business Plan</li> <li>• Finances and Financing</li> <li>• Availability of Resources</li> </ul>

1.6 Examine how the relationship among marketing, sales, and production affects profitability	<ul style="list-style-type: none"> <li>• Profit and Loss</li> <li>• Difference between Marketing and Sales</li> <li>• Quality</li> <li>• Interdependency</li> </ul>
1.7 Describe how production processes and cycles affect media businesses	<ul style="list-style-type: none"> <li>• Seasonal</li> <li>• Special Events (Political, World, Entertainment)</li> <li>• Fads</li> </ul>
1.8 Determine costing projections for various media objectives and/or functions	<ul style="list-style-type: none"> <li>• Surveys</li> <li>• Market Analysis</li> </ul>
1.9 Describe how diversity (cultural, ethnic, multigenerational) and ethics affect the selection of projects and programs	<ul style="list-style-type: none"> <li>• Research</li> </ul>
1.10 Describe how ethics, hype, and content influence media products	<ul style="list-style-type: none"> <li>• Confidence in Product</li> <li>• Word of Mouth</li> </ul>
1.11 Identify industry safety standards	<ul style="list-style-type: none"> <li>• OSHA</li> </ul>
1.12 Describe multiple distribution platforms that are in compliance with the American Disability Act	<ul style="list-style-type: none"> <li>• Research</li> <li>• Sight Specific</li> <li>• Codes</li> </ul>
<b>STANDARD 2.0 INVESTIGATE INTELLECTUAL PROPERTY LAW AND RIGHTS MANAGEMENT</b>	
2.1 Identify current legal issues in media professions	<ul style="list-style-type: none"> <li>• Copyright</li> <li>• Plagiarism</li> <li>• Ethics</li> </ul>
2.2 Explain plagiarism and its effects in business	<ul style="list-style-type: none"> <li>• Profit Loss</li> <li>• Reputation</li> <li>• Loss of Job</li> </ul>
2.3 Define the establishment of a copyright	<ul style="list-style-type: none"> <li>• Time of Creation</li> </ul>
2.4 Discuss rights and implications of copyright law	<ul style="list-style-type: none"> <li>• Review the copyright law</li> <li>• Fair Use</li> <li>• Know where to research</li> </ul>
2.5 Examine intellectual property law and its ramifications	<ul style="list-style-type: none"> <li>• Examine Intellectual property laws</li> <li>• Know where to research</li> </ul>
2.6 Explain the establishment of a trade name and trademark	<ul style="list-style-type: none"> <li>• Protects the name or symbol</li> <li>• Identifies the source</li> </ul>
2.7 Explain fair use in relation to legal and regulatory considerations	<ul style="list-style-type: none"> <li>• Education/Classroom Responsibilities</li> </ul>