

## **Introduction to Graphic Communications**

This topic provides the student with a review of the key business and production elements of the graphic communications industry. Topic areas include the structure of the industry, the organizations that support it, the economic footprint of the industry, the types of print businesses and the markets that they serve, the various print processes that are in use and the products that they produce, the way companies are organized, occupational opportunities in the industry, and the basic production equipment used in a typical printing plant.

Armed with this knowledge, a student will be able identify and evaluate employment opportunities in the various types of graphic communications businesses. They will have an understanding of the expectations and knowledge requirements for various positions and where they fit into an organization as well as the pathway for advancement. Students will develop an appreciation of the value of print and where print fits in with regard to other forms of communication.

*For purpose of simplicity, the terms graphic communications and printing are used interchangeably*

The course is segmented into nine Subject Areas:

- A. Industry Overview
- B. Safety and Health
- C. File Creation to Output
- D. Offset Press
- E. Digital Press
- F. Substrates
- G. Bindery, Finishing and Distribution
- H. Math and Measurement
- I. Job Application and Interpersonal Skills

### **A. Industry Overview**

The graphic communications industry is one of the largest manufacturers in the US. It employs approximately one million workers and generates approximately \$150 billion in sales. A simple scan in our homes or offices indicates the variety of materials that are produced by the printing industry.

Printing is an essential communication vehicle, and continues to grow in size. Either standalone or in conjunction with emerging digital communications, printing is a vital contributor to the American economy.

The following competencies provide an overview of the graphic communication industry.

### Graphic Communications Industry

- 1) Define the graphic communications industry
- 2) Describe the size and economic value of the industry
  - a. Employees
  - b. Number of establishments
  - c. Revenue
  - d. Profit Levels
- 3) Identify the types of businesses and organizations that comprise the industry
- 4) Review the types of products and services provided by the industry
- 5) Evaluate the use and value of different types of printing to a customer
- 6) Describe the markets that use printing
  - a. Direct Mail
  - b. Books
  - c. Magazines
  - d. Stationery
  - e. Packaging
- 7) Compare the role (cost and effectiveness) of print compared to other communication mediums
  - a. Television
  - b. Radio
  - c. Internet
  - d. Social Media
- 8) Assess examples of different types of communications mediums
- 9) Identify local and national graphic communications associations
- 10) Describe the purpose of local and national graphic communications associations

### Printing Process

- 11) Describe common printing processes
  - a. Flexography
  - b. Gravure
  - c. Letterpress
  - d. Offset Lithography
  - e. Screen Printing
  - f. Digital
- 12) List common products produced by each printing process
- 13) Identify samples of each printing process
- 14) Discuss advantages and disadvantages of each printing process
  - a. Economic
  - b. Delivery timeframe
  - c. Physical characteristics of printed piece
- 15) Define counterfeiting, copyright, and intellectual property infringement

- 16) Identify the issues and challenges associated with counterfeiting, copyright and intellectual property infringement in the printing industry
- 17) Discuss emerging technologies related to printing
  - a. 3D Printing
  - b. Nanography
  - c. Production Inkjet
  - d. Quick Response Codes (QR)
  - e. Cross media Communications
  - f. Augmented Reality (AR)
  - g. Data driven print
  - h. Cloud based composition

#### How Printing is Produced

- 18) Describe the function and use of basic production equipment used in a commercial printing plant
  - a. Computer Workstation
  - b. Scanner
  - c. Proofing Device
  - d. Platesetter
  - e. Offset Lithographic press
  - f. Digital Press
  - g. Paper Cutter
  - h. Folder
  - i. Saddle Stitcher
  - j. Perfect Binder
  - k. Paper Padding Press
  - l. Paper Drill
- 19) Define workflow
- 20) Review common steps in a typical print workflow
  - a. Digital file preparation
  - b. Print
  - c. Finish
- 21) Describe the purpose of a job ticket
- 22) Locate key production information on a job ticket
- 23) Identify departments within printing organization through live or virtual observation
- 24) Describe the role and responsibilities of departments within printing organization
  - a. Sales
  - b. Estimating
  - c. File Preparation
  - d. Printing
  - e. Binding
  - f. Shipping

## **B. Safety and Health**

Safety while working with printing machinery and chemicals is important for the protection of workers. Health and safety regulations may vary within a printing operation depending on how the company is organized and where it is located.

The following competencies discuss the importance of safety and regulations in place.

### Safety rules

- 25) Review applicable national and local governmental safety regulations
- 26) Review school graphic lab's safety regulations
- 27) Explain the use and locations of safety interlocks on machinery
- 28) Identify safety regulations in place at the school graphic lab as they relate to proper paper movement
- 29) List the school graphic lab Standard Operating Procedures (SOP) for spills
- 30) Explain the proper procedures to clean up any spills at school graphic lab
- 31) List the proper procedures when handling cleaning chemicals

### Safety Data Sheets

- 32) Describe a Safety Data Sheet
- 33) Explain the use of Safety Data Sheet
- 34) Evaluate Safety Data Sheets in place in the school graphic lab

## **C. File Creation to Output**

Printing a document requires a great deal of skill and knowledge. Professionals who work in the printing industry need to be familiar with every step of the process from creation of a document to its output.

There is a large variety of software and equipment that designers, prepress and press operators use to create high quality printing. Their knowledge of these tools is often the difference in a successful print project.

The following competencies define the workflow steps and equipment used to create and output a file.

*Software Brand names are included for reference or example only. The listing of names is not meant to be an endorsement.*

### File Creation and Design

- 35) Identify common components of page
  - a. Text
  - b. Illustrations
  - c. Photographs

- 36) Proofread and edit page of text, making corrections/adjustments as specified by instructor
- 37) Define these terms: page layout, image editing and illustration
- 38) Review professional software applications
  - a. Page Layout i.e. Adobe InDesign, QuarkXPress
  - b. Image Editing i.e. Adobe PhotoShop
  - c. Illustration i.e. Adobe Illustrator
- 39) Review office/home-based software applications
  - a. Microsoft Office
  - b. Google Docs
- 40) Create a page that includes fonts, styles, margins, indents, tabs, photographs and illustrations using professional layout software
- 41) Create and print a portfolio to showcase your work
- 42) Assess the significance of Adobe Acrobat Portable Document Format (PDF) as it pertains to the graphic communications industry
- 43) Create PDF of page that includes photographs and illustrations
- 44) Compare the differences between supplying PDF files versus native files for print
- 45) Define RGB and CMYK color reproduction
- 46) Discuss the Pantone color process
- 47) Contrast color reproduction viewed on digital display (Monitor, TV, tablet, smartphone) versus print
- 48) Show the effect of lighting on printed color perception
- 49) Identify different types of graphics
  - a. Line art
  - b. Continuous tone
  - c. Raster
  - d. Vector
- 50) Describe pixels per inch resolution
- 51) Cite examples of various file formats and their extensions: .doc;.pdf; .tif; .eps; .jpg; .bmp;.indd; .ai;.xls;.ePub
- 52) Review minimum resolution requirements for different reproduction devices
  - a. Screen display
  - b. Print
- 53) Compare use of scanner versus lens based image capture (digital camera)

#### Print Output

- 54) Describe Preflighting
- 55) List common file issues found during preflight
- 56) Collect examples of four printed color applications
  - a. Sunday newspaper retail insert
  - b. Cereal package
  - c. Clothing catalog
  - d. High end brochure (automotive, cosmetic)

- 57) Compare color quality reproduction requirements of each
- 58) Define Imposition
- 59) Define Trapping
- 60) Define Bleed
- 61) Gather samples of full bleed and no bleed printed examples
- 62) Explain the purpose of proofing
- 63) Compare hard and soft proofs

#### Digital Output

- 64) Review how content may be published digitally
  - a. Publishing to the Web
  - b. Social media
  - c. Mobile devices
- 65) Define e-publishing / e-books
- 66) Compare the advantages / disadvantages of e-publishing/e-books versus traditional books

#### **D. Offset Press**

The traditional offset lithographic printing process has been in common use since the 1950's. It is the most common method to produce a wide range of printed products. Offset presses are available with different sizes, speeds and number of color capabilities.

The following competencies define the offset printing process and the different types of presses used.

#### Offset Lithographic Press

- 67) Discuss the imaging process of an offset lithographic press

#### Components of Offset Lithographic Press

- 68) Review components of an offset press
  - a. Describe a Printing Unit
    - i. Inking System
    - ii. Water System
    - iii. Plate Cylinder
    - iv. Blanket Cylinder
    - v. Impression Cylinder
  - b. Describe an offset printing plate
  - c. Describe an offset blanket
- 69) Compare feeding system of a sheet fed press (roll, sheetfed)

#### Quality

- 70) Describe the use of color bars

## **E. Digital Press**

There is a broad spectrum of digital presses that impact quality, speed and cost of a printed piece.

The following competencies describes the types of digital printing technologies that are in common use within printing establishments, this includes toner based (electrophotography) and inkjet.

### Digital Press

- 71) Discuss the imaging process of a digital press

### Components of Digital Press

- 72) Review components of digital presses
  - a. Digital Front End Raster Image Processor (RIP)
  - b. Print Engine
    - i. Toner based (Electrophotography)
    - ii. Inkjet
  - c. Delivery systems
    - i. Roll to roll
    - ii. Stacker
    - iii. In-line finishing

## **F. Substrates**

Substrates may include paper, plastics, or metal materials that have images printed onto them. There is a wide range of paper substrates that can have different weights, thicknesses, finishes and colors.

The following competencies provides an overview of the types of substrates that are in common use in the printing industry.

- 73) Discuss the impact that substrates have on a printed project
- 74) Identify wood pulp based paper substrates
- 75) Review common paper types, weights, grades and classifications commonly used in the printing industry
- 76) List common page and sheet sizes used in United States and Europe
- 77) Describe Parent Sheet
- 78) Identify non-traditional specialty substrates
- 79) Gather examples of pulp, plastic and metal based substrates
- 80) Discuss sustainability / recyclability of pulp based substrates
- 81) Debate sustainability of print versus digital media
- 82) Describe Forest Stewardship Council (FSC) certified papers

## **G. Bindery, Finishing and Distribution**

The majority of printed applications are finished or bound together in some fashion. Finishing may occur in-line with the press, especially with digital presses or may be a separate operation.

The following competencies define the types of finishing and bindery operations and equipment that are used.

### Bindery and Finishing

- 83) Determine grain direction of paper
- 84) Explain the importance of grain direction
- 85) Describe a folded signature
- 86) Describe bindery and finishing options
  - a. Loose leaf
  - b. Saddle Stitch
  - c. Perfect Bind
  - d. Case Binding
  - a. Lay Flat Binding
  - b. Die Cutting
  - c. Embossing / Debossing
  - d. Foil Stamping
- 87) Contrast use and benefits of each bindery option
- 88) Create 16 page saddle stitch booklet

### Finishing equipment

- 89) Describe in-line, near-line and off-line finishing
- 90) Identify commonly used finishing and binding equipment and supplies
  - a. Padding
  - b. Stapling
  - c. Stitching
  - d. Punching / Drilling
  - e. Folding
  - f. Collating

## **H. Math and Measurement**

The use of math and measurement skills is critical in a wide range of job functions within the graphic communications industry. Because of the many units of measurement only used in the graphic communications industry, it is important to be able to work with them.

The math and measurement application competencies were designed to reinforce math skills necessary for successful employment within the graphic communications industry.



- 91) Describe English and Metric measurement systems
- 92) Define Points and Picas
- 93) Demonstrate the measurement of type in points and line length in picas
- 94) Calculate reduction or enlargement percentage of original photograph to final size
- 95) Determine optimum layout for minimizing waste when cutting smaller sheets out of larger parent sized sheet of paper

## **I. Job Application and Interpersonal Skills**

These competencies prepare the student to succeed in locating, applying for, and obtaining appropriate graphic communications employment. By demonstrating competence in these areas, the student will be better able to demonstrate his/her value to prospective employers and to stand out from less prepared job seekers. In addition, the student will know how to discover and compare the strengths and weaknesses of employment opportunities.

The following competencies discuss employment opportunities and positions that are available in the graphic communications industry.

- 96) Review roles and responsibilities of employment positions in the graphic communications industry
  - a. Sales representative
  - b. Customer service representative
  - c. Estimator
  - d. Designer
  - e. Database programmer
  - f. Pre-media technician
  - g. Press operator
  - h. Bindery operator
  - i. Management
- 97) Describe work ethic skills that should be exhibited by employees in the graphic communications industry
- 98) Describe the positive and negative impact of social media on a personal brand or perception
- 99) Identify basic salary/wage expectation ranges for major occupations in the graphic communications industry
- 100) Locate job listings through a variety of sources (e.g., Internet, job boards, "Help Wanted" advertisement, job fairs, agencies, etc.)
- 101) Gather job postings for positions in the graphic communications industry
- 102) Write a personal resume that highlights the candidate's experience, skills, and talents, and includes references
- 103) Write a cover letter for a specific job that differentiates the candidate from other job seekers
- 104) Demonstrate how to customize a resume and cover letter to match a job listing and employer

- 105) Complete an employment application form
- 106) Discuss and demonstrate ways to prepare for a successful interview
- 107) Identify common interview questions
- 108) Prepare responses to common interview questions
- 109) Develop appropriate questions to ask prospective employers during interviews
- 110) Conduct a mock job interview conducted by a teacher, parent, or another student
- 111) Prepare a letter or e-mail to follow up with a job interview
- 112) Evaluate an employment benefits package
- 113) Compare job opportunities, including wages, benefits, responsibilities, and potential career growth