

Vocational Graphic Communications III  
(Course No. 665)

Career and Technical Education Department

Waltham High School  
Waltham, Massachusetts

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Fall 2016



## Introduction

This course is designed to provide a solid understanding of the Graphic Communications and Printing Professions. It is intended to cover the spectrum of communication from verbal through high-tech computer-enhanced tools. Students will investigate the history of communication and its impact on the world. Continuation of the impact of communication on world and local events will be covered, as well as ethical and moral issues surrounding the use of media, technology, and propaganda. The physical operation of printing and pre-press equipment and software will provide an opportunity to increase individual competency in the areas of graphic communications and printing. Refining the skills necessary for future employment in the craft, as well as opportunities for self-employment will be presented.

Successful completion of Courses 676 and 623 are prerequisites for enrollment in Course 665.

Third Year Course 665 Seventeen and one-half (17.5) credits will be offered for successful completion of this course.



WALTHAM HIGH SCHOOL

**Curriculum Design Template**

Department: Career & Technical Programs Course Title: **Vocational Graphic Communications**

Course No. #665 Grade (circle all that apply) 9 10 11 **12**

- I. Intended learning outcomes: *What we want students to know and be able to do.*  
Student will know:
- a. The importance of attendance and promptness
  - b. Attention to detail and follow-through on assigned tasks
  - c. The historical importance of printing and graphic communication
  - d. Techniques, theories, and methods of print production
  - e. Photographic principles (technical and artistic)
  - f. Measurement, application of mathematical calculation, chemical interaction
  - g. Safety procedures and requirements
  - h. Apply for, obtain, and maintain gainful employment through acquisition of superior work skills
  - i. Use the computer to effectively communicate ideas
- Massachusetts Curriculum Frameworks standards (Technology Education), or Occupational Competencies (Vocational Program) emphasized.*  
See attached Competency Sheets
- II. Evidence of Student Learning: *How students will demonstrate what they are able to do.*
- a. Hands-on application of lessons imparted through production of live work in simulated shop (on-time completion of assigned tasks, appropriate quality, initiative, etc.)
  - b. Portfolio production and maintenance
  - c. Written examinations on measurement, mathematics, design and safety
  - d. Demonstrate acceptable attendance record under strict guidelines
  - e. Complete requirements and maintain minimum grade average for a Tech-Prep placement
- III. Instructional Strategies: *Instructional strategies used and the learning experiences created.*
- a. Problem solving situations requiring integration of skills (measurement, chemical interaction, proof-reading, calculation of required material) will be delivered through use of project-based activities
  - b. Creation of activities centered on production of learning materials for use by teachers in subjects such as history, mathematics, science, English/foreign language, music, and sports
  - c. Hands-on production of live work in a simulated shop environment
  - d. Bring critical and creative thinking to every activity



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Syllabus

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Fall 2016

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## Textbooks and Materials To Be Used in Class

*Waltham High School Vocational Graphic Communications Print Shop Safety Manual.*

Any history book of the student's choosing. Calligraphy samples, Icon samples.

Current newspaper and/or magazine articles. Historical references and anecdotes.

Current office store circulars, cost comparison reports, library and store research.

Invoicing software.

### *Offset Printing Fundamentals*

#### *Handbook of Print Media H. Kipphan for Heidelberg*

Print Shop Printing Request Forms

*School of Modern Photography* text

## Materials Needed for Student Preparedness

Students will come to class with a positive attitude, willingness to learn and will adhere to the clothing guidelines outlined in the Safety Manual. Hair and loose clothing will be tied back or covered at all times in the shop area. All necessary material will be supplied.

## Course Description

This course is designed to provide an expansion in the knowledge and understanding of the Graphic Communications field. It is intended to cover the spectrum of communication from verbal through computer-enhanced. Students will investigate the history of communication and its impact on today's world. The impact of communication will be covered, as well as ethical and moral issues surrounding the use of media, technology, and propaganda. The physical operation of printing and pre-press equipment and software, as well as the trend for web content and creation will provide an opportunity to increase individual competency in the field of graphic communications. Skills necessary for future employment in the field, as well as opportunities for self-employment will be presented. Students should have completed Courses 676 and 623, or their equivalent, before starting this Course.

Seventeen and one-half (17.5) credits will be offered for successful completion of this course.



## Course Objectives

Students will learn:

- Building Safety, fire and emergency evacuation drills
- Personal Safety, ergonomics, clothing, safety devices
- OSHA's Role in Workplace Safety
- Origins of communication
- Reasons for communication
- Means of communication
- Evolution of Languages
- Icons from Egypt to Windows
- Calligraphy
- Movable type
- Manuscripts
- Guttenberg / Franklin
- Freedom of the Press
- Propaganda
- The Internet / Web
- Ethics and Personal Responsibility
- Overage / Shortage / Standard Industry Practice
- Waste Management and Recycling
- Work Habits, punctuality and attendance
- Positive Attitude
- Teamwork
- Legal Issues
- Listening skills
- Attention to detail
- Courtesy
- Honesty and Integrity
- Estimating skills
- The costs of various types of paper
- The costs associated with ink requirements
- An investigation of overhead and its components
- Supplies
- Inventory
- Personnel
- Hazardous Waste and its disposal
- Taxes and Fees
- Determining the Cost
- Determining Markup
- The importance of cash flow
- Filing and Record keeping
- Filling out the job ticket
- Understanding all fields on the job ticket
- Complete filling of every field on the job ticket
- Proper filing procedures
- Investigation of Substrates used in the field
- Using the light table

## Course Objectives

Students will learn:

- Proper Use of a T-Square and triangle
- Using X-acto knives
- Opaquing and ruling techniques
- Printer Marks including Crop and register marks
- Overlays and tints
- Thumbnail creation
- Type specification
- Paper Characteristics
- Paper manufacture
- Paper choice
- Paper weight and measurement
- Paper grain and its importance
- Paper color
- Ink and its manufacture
- Ink usage, the right colors for the job
- Viscosity
- CMYK Progressives
- The method of applying on the press
- Transparent vs. Opaque
- Mixing to achieve PMS match
- Dot gain
- Solvents and their handling
- Blanket Wash and its uses
- Roller Cleaners
- Scheduling of maintenance
- Maintenance and Lubrication procedures
- Pumice and abrasives
- Blanket repair chemicals
- Measurements to 1/32 of an inch
- Type gauge for measuring font size, leading, spacing, column widths, etc.
- Paper counting and measurement techniques
- Creating a cutting diagram to determine best cuts
- Measuring and mixing fountain solution / pH
- Measuring and mixing development and fixer solutions
- Tag and Lockout procedures
- Record-keeping
- Types of inspections

## Course Objectives

Students will learn:

- Guillotine Cutter Safety
- Clamp pressure
- Blade Sharpness and replacement
- False Clamp
- Camera and Darkroom
- Reflection and Refraction
- Interaction with light and dark
- Balance and color
- Effects of direction of incidence
- Use of safelights
- Actinic
- Excess Coverage / Balance of image
- Portrait and Landscape orientation
- Photojournalism, Portrait, Landscape, Art, Reproduction
- Depth of Field and Aperture
- Shutter speed adjustment
- Lenses and focal lengths
- Exposure compensations
- Film formats
- Slide and negative film
- Digital Photography
- How to load unload a camera or download pictures
- Safety with chemicals
- Chemical mixing and importance of temperature and light safe room
- Agitation
- Saturation and Color Balance / Contrast
- Adjusting Levels and Curves
- Grayscale, Resolution, Image Modes
- Continuous tone photographs
- Grain and film speed
- Halftone images
- Dot and dot gain effects
- Halftone screens
- Line shots
- Evaluating the negative
- Density of negative
- Clarity of image
- Reticulation / Scratches / Fogging
- Workflow, determining the steps to be followed in production
  - Transferring job ticket information to the flats
  - Determining the paper orientation and print technique (work & turn / tumble, etc.)
  - Create a New File Folder or Place Record on Current File Folder

## Course Objectives

Students will learn:

- Measurements and Steps to Stripping Negatives
  - Paper Size
  - Centerline
  - Gripper Margin
  - Bend
  - Bleeds
  - Crop Marks
  - Register Marks
  - Pin Register
  - Goldenrod Paper
  - Schematics
- Cutting Masks / Alignment / Orientation
- Opaque and Scribe
- Pin Register
- Double Burns
- Step and Repeat
- Screens and Tints
- Processor development
- Quick plates
- Dylux prints for proofing purposes
- The importance of regularly scheduled maintenance
- Tagging and lockout procedures
- Unsafe condition reporting procedures
- Recording keeping
- Importance of work area orderliness and organization
- Blanket and plate evaluation and relationship
- Pin-Bar vs. Clamp mounting
- Blanket repair / Replacement / Cleaning
- Cleaning the plate
- Repairing plates on the press
- Horizontal movement of image
- Vertical movement of image
- Adjusting skew of plate.
- Side guides
- Vacuum / Blast / Sheet separation
- Table Height adjustment for various papers
- Sucker feet assessment
- Paper transfer from Feed Table to Delivery Table
- Paper path
- Register
- How to Mix Fountain Solution
- Measuring pH and mixing to achieve proper pH
- Application of water and achieving the proper balance and amount
- The water fountain rollers and their importance

## Course Objectives

Students will learn:

- The ink fountain
- Viscosity
- Color and color mixing
- Pantone Matching System Spot Color vs. Process Color
- Adjustment of keys in application of ink for evenness
- Ink and water balance
- The ink fountain rollers, their role and importance
- Oscillating rollers and their role
- Measuring roller to roller pressures
- Adjustment of pressures to ensure even distribution of ink and water
- The sequence of rollers and the importance of even ink distribution
- Ink transfer as related to paper surface and absorption
- The movement of paper from the feed table to the image application
- The types of grip utilized by the equipment to handle the paper
- The application of vacuum and blast to achieve single sheet feed
- The function of multi-sheet stops and trips to prevent multiple sheet feeding
- The importance of repeatability and jogging
- Adjusting the delivery side guides
- Adjusting for sheet drop
- Adjustment of the table drop in the delivery system
- The application of powder to aid in preventing offset
- Safety when removing sheets from the press
- Pulling sheets at regular intervals to inspect
- The importance of adequate lighting conditions
- Attention to detail
- Check both sides: Image Offset, where it comes from and how to eliminate it
- Toning and how to avoid it
- Scumming / Hickeys and their repair
- Dot Gain
- Even ink application and how to compensate for excess or unequal coverage
- Adjusting for plate imperfections
- Removal of debris on plate or blanket
- Adjustment of keys on ink fountain to accommodate heavy areas
- Adjustment of water fountain to accommodate ink usage
- Clamp movement to adjust skew
- Blanket cylinder adjustment for vertical alignment
- Feed table guide adjustment for horizontal alignment
- Folding and measurement
- Impression cylinder

## Course Objectives

Students will learn:

- The inspection for imperfections
- Fulfilling the quantity requirements
- Handling work not yet completely dry
- Importance of speed in the quality of work
- Maintenance
- Vacuum and Blast
- Gate setup
- Static Electricity
- Paper feed and handling
- Paper weights and grains
- Measurement and diagrams
- Count and industry standards
- Maintenance and lubrication
- Paper feed adjustments
- Guides and importance of parallel
- Air adjustment, blast and vacuum
- Folding gate measurement and adjustment
- Delivery guides and wheel adjustment
- Inspection and packaging
- Staple loading
- Guide placement
- Adjustment for finish size
- Inspection / Count / Packaging
- Maintenance and lubrication
- Paper feed adjustments
- Guides and importance of parallel
- Air adjustment, blast and vacuum
- Folding gate measurement and adjustment
- Delivery guides and wheel adjustment
- Package specifications (weight and stacking limits)
- Neatness and labeling issues
- Packing materials
- Lifting guidelines
- Record keeping issues and tracking of packages
- Labeling and clarity of records
- Telephone skills
- Courtesy in delivery
- Leaving the customer in positive frame of mind
- Acceptable procedures for delivery and return (speeding vs. dallying)



## Assessment

The student will be assessed in the following ways:

Our Safety Manual has many means of assessing student understanding of all safety issues. No student will be allowed into the shop area without achieving a perfect score on the Safety Manual Assessment Sheets.

Assessment through visual inspection of materials produced in the process of preparing and researching the subjects in unit activities.

Assessment via discussion, quizzes and sample exercises in decision making. Right vs. Wrong

Assessment via game playing skills, mock interviews, quizzes, and tests. Discussion, both in small group and entire class.

Assessment via discussion, quizzes and exercises in production of estimate and balance sheets.

Assessment via discussion, quizzes and exercises in creating invoices. Draw or create a functioning filing system, either computer or physical.

Assessment via discussion, quizzes and exercises in successful gaming. Paper color naming contest.

Assessment via discussion, quizzes and exercises in creating thumbnails, artwork, and correct printer's marks.

Assessment via discussion, quizzes and exercises in creating a functioning filing system, integrating computer software and physical assets.

Assessment via discussion, quizzes and exercises in measuring and counting.

Assessment via discussion, quizzes and exercises in creating schedules on computer, and on paper.

Assessment via discussion, quizzes and examination of pictures taken. Visual assessment of photos shot.

Assessment via discussion, quizzes and computer image manipulation

Assessment via discussion, written and oral quizzes and exercises in the production of live work. Review of material produced over the course of the year to determine weaknesses and strengths. Constant monitoring of Competency Sheets is essential.

Assessment via discussion, quizzes and exercises in live job production. Creation of Dylux prints.

Assessment via discussion, oral and written quizzes and exercises in the production of live and pre-positioned work. A constant monitoring and updating of Competency Sheets and portfolio are necessary.



## Course Calendar / Schedule

Unit One: Safety

Unit Two: History

Unit Three: Managing as a Business: Industry Standards

Unit Four: Managing as a Business: Customer Interview Skills

Unit Five: Managing as a Business: Financial Considerations

Unit Six: Managing as a Business: Understanding Workflow

Unit Seven: Artwork Preparation: Print and Web

Unit Eight: Artwork Preparation: Raster Image Processing

Unit Nine: Printing Materials: Paper

Unit Ten: Printing Materials: Ink

Unit Eleven: Printing Materials: Chemicals

Unit Twelve: Measurement

Unit Thirteen: Maintenance Overview

Unit Fourteen: Cutter Operation

Unit Fifteen: Camera Operation and Photography: Principles of Light

Unit Sixteen: Camera Operation and Photography: Framing the Image

Unit Seventeen: Camera Operation and Photography: Camera as Tool

Unit Eighteen: Camera Operation and Photography: Film/Plate Development

Unit Nineteen: Camera Operation and Photography: Contone/Halftone/Line

Unit Twenty: Camera Operation and Photography: Quality Assessment

Unit Twenty-One: Stripping: Starting Right

Unit Twenty-Two: Plate Making (Megaplate and Metal)

Unit Twenty-Three: The Printing Press: The Basics

Unit Twenty-Four: The Printing Press: Plate and Blanket

## Course Calendar / Schedule

Unit Twenty-Five: The Printing Press: Feed System

Unit Twenty-Six: The Printing Press: Water and Ink Fountains

Unit Twenty-Seven: The Printing Press: The Rollers

Unit Twenty-Eight: The Printing Press: Delivery System

Unit Twenty-Nine: The Printing Press: Inspection

Unit Thirty: The Printing Press: Image Adjustment

Unit Thirty-One: The Printing Press: The Press Run

Unit Thirty-Two: Bindery Overview

Unit Thirty-Three: The Folder

Unit Thirty-Four: The Booklet Maker

Unit Thirty-Five: Wrapping

Unit Thirty-Six: Delivery

Unit Thirty-Seven: Life After High School

## Assessment

Grading will be a combination of project assessment, performance on assigned tasks, completion of competency list, and portfolio assessment. Beyond these items, daily assessment will be made on promptness/attendance, attitude, effort, and quality of assigned work. A complete weighting of these assessments is as follows:

### ***Projects 50%***

Projects will account for 50% of your grade. Each person may have a different responsibility within each project, but the individual assessment will be made on the following criteria:

- Teamwork
- Management Skills
- Adherence to Task
- Feedback (bi-directional)
- Customer Interaction
- Speaking and Presentation
- Writing Skills
- Attention to Detail
- Follow-up
- Initiative
- Design Skills
- Quality of Research
- Problem Solving Skills

### ***Work Habits 20%***

- Attendance — The Graphic Communications Program strictly adheres to the WHS “N” Grade Policy
- Attitude
- Effort
- Quality

### ***Quizzes 15%***

Quizzes will be given to measure comprehension of concepts that are assessable in no other manner, and may be assigned as homework.

### ***Portfolio 15%***

***Expectations:*** Students are expected to behave in a manner consistent with acceptable business practices. The daily assessment of promptness, attitude, effort, and quality will be heavily weighted in the student's final grade. When a student enters the classroom they should consider themselves in a work environment, and conduct themselves in a suitable manner.

***Communication:*** Open and honest communication is essential to success in this course, for both student and instructor. My email link can be found on the front page. Any special requirements may be discussed. Every effort will be made to accommodate students who make an effort to accommodate the course work.



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Curriculum

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## Introduction

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Successful completion of Courses 676 and 623 are prerequisites for enrollment in Course 665.

Third Year Course 665 Seventeen and one-half (17.5) credits will be offered for successful completion of this course.



## Unit One: Safety

2 weeks

### Lesson or Unit Objective

Introduction and overview of all safety procedures

### Unit Topics – A Review of:

- Building Safety, fire and emergency evacuation drills
- Personal Safety, ergonomics, clothing, safety devices
- Operating Safety, procedures to be followed at each work station

### Unit Activities – Demonstration of competency during production of live work

- Safety Book coverage
- Emergency Evacuation rehearsal
- Draw emergency exit map
- Study fire extinguisher fact sheets
- Introduce Coverage of MSDS requirements
- Introduce The Right to Know Law
- Introduce Chemical handling and precautions
- Clothing requirements and their purpose
- Sitting, lifting, moving, typing, ergonomics
- Safety procedures for the Jogging Machine
- Safety procedures for the Cutter
- Safety procedures for the Folder
- Safety procedures for the Press
- Safety procedures for the Stitcher
- Safety procedures for the Camera
- Safety procedures for the Plate Maker

### Student Assessment

Our Safety Manual has many means of assessing student understanding of all safety issues. No student will be allowed into the shop area without achieving a perfect score on the Safety Manual Assessment Sheets.

### Text:

Waltham High School Vocational Graphic Communications Print Shop Safety Manual.  
Handbook of Print Media

## Unit Two: History of Communication

1 week

### Lesson or Unit Objective

Introduction and overview of the history of printing

### Unit Topics - A Review of:

- Origins of communication
- Reasons for communication: Brochures, advertising
- Means of communication
- Evolution of languages
- Icons from Egypt to Windows
- Calligraphy
- Movable type / Letterpress / Lithography / Gravure / CTP
- Manuscripts
- Guttenberg
- Franklin
- Freedom of the Press
- Propaganda
- The Internet and Web Sites
- Future Technologies / Hybrid

### Unit Activities - Demonstration of competency during production of live work

- Demonstrate types of communication, verbal and non-verbal, visual and non-visual role play
- Create an intricate page of manuscript, by hand
- Illustrate icons for common activities or actions
- Contest to find facts about Ben Franklin
- Investigate the role of propaganda throughout history
- Read about the role of the Internet and compare to the history of communication

### Student Assessment

Assessment through visual inspection of materials produced in the process of preparing and researching the subjects in unit activities.

### Text:

Any history book of the student's choosing. Calligraphy samples, Icon samples.  
Handbook of Print Media

## Unit Three: Managing as a Business: Industry Standards

1 week

### Lesson or Unit Objective

Introduction and overview of Industry Standards

### Unit Topics - A Review of:

- Ethics and Integrity
- Copyright Law
- Overage / Shortage
- Waste and Recycling
- Work Habits, punctuality and attendance
- Attitude
- Teamwork
- Legal Issues

### Unit Activities - Demonstration of competency during production of live work

- Discussions on Integrity and Ethics
- Examining Counterfeiting and its Consequences
- The importance of quality
- Laws governing the operation of a business in Massachusetts
- Child Labor Laws
- Copyright Laws and how they affect business

### Student Assessment

Assessment via discussion, informal and formal quizzes and sample exercises in decision making.  
Right vs. Wrong

### Text:

Current newspaper and/or magazine articles. Historical references and anecdotes.

Handbook of Print Media

## Unit Four: Managing as a Business: Customer Interview Skills

1 week

### Lesson or Unit Objective

Introduction and overview of skills and techniques necessary to ascertain customer needs and desires in the production of their piece.

### Unit Topics - A Review of:

- Listening skills
- Attention to detail
- Courtesy
- Honesty and Integrity
- Estimating skills

### Unit Activities - Demonstration of competency during production of live work

- Demonstration of Integrity
- How to listen. Role-playing and creation of materials with strict guidelines
- What it means to be courteous
- Interviews with clients
- Break down tasks and assign time segments to determine delivery capabilities
- Phone calls

### Student Assessment

Assessment via game playing skills, mock interviews, informal and formal quizzes, and tests. Discussion, both in small group and entire class.

### Text:

Handbook of Print Media

## Unit Five: Managing as a Business: Financial Considerations

2 weeks

### Lesson or Unit Objective

Students will examine the materials and supplies necessary to produce a printed (or web) piece. Price estimates will be produced after determining the costs associated with the creation of the piece. Invoice creation and bookkeeping.

### Unit Topics - A Review of:

- The costs of various types of paper
- The costs associated with ink requirements
- An investigation of overhead and its components
- Supplies, Inventory, Personnel expenses
- Hazardous Waste and its disposal
- Taxes and Fees
- Determining the Cost / Value Added Markup
- The importance of cash flow
- Filing and Record keeping / Create the invoice
- Personnel Deployment
- Financing / Market Trends
- Quality Assurance

### Unit Activities - Demonstration of competency during production of live work

- Compare print vs. web values and market reach
- Compare prices for various types and brands of paper
- Investigate ink types and their costs and benefits
- Search the Internet for legal issues involving taxes and fees
- Visit Staples and Office stores for costs and expenses associated with office supplies
- Prepare a balance sheet showing an understanding of the costs associated with producing a final piece
- Create an invoice
  - Assemble a worksheet detailing all expenses required
  - Research competition for price comparisons
  - Understand standard billing practices and discount offers
  - Establish a functional filing and record keeping system
  - Create stationery (Letterhead, business card, envelope, receipt, invoice, forms, ads, brochures, and fliers)

### Student Assessment

Assessment via discussion, informal and formal quizzes and exercises in production of estimate and balance sheets.

### Text:

Current office store circulars, cost comparison reports, library and store research.  
Handbook of Print Media

## Unit Six: Managing as a Business: Understanding Workflow

1 week

### Lesson or Unit Objective

Students will learn the sequence of steps required to produce a job for the printing press or for the web.

### Unit Topics - A Review of:

- Job Categories: Estimating, Pre-Press, Press, Bindery, Finishing
- Filling out the job ticket
- Understanding all fields on the job ticket
- Complete filling of every field on the job ticket
- Proper filing procedures
- Print and Distribute vs. Distribute and Print

### Unit Activities - Demonstration of competency during production of live work

- Research job categories, salaries, and responsibilities
- Fill out job tickets with various components
- Improve job tickets already filled out
- Perfect a functional filing system

### Student Assessment

Assessment via discussion, informal and formal quizzes and exercises in creating a functioning filing system, integrating computer software and physical assets.

### Text:

Offset Printing Fundamentals  
Print Shop Printing Request Forms  
Handbook of Print Media



## Unit Seven: Artwork Preparation: Print and Web

4 weeks

### Lesson or Unit Objective

Students will learn the importance of accuracy and measurement when creating artwork.

### Unit Topics - A Review of:

- Data Storage—Servers, flash drives, CDs, DVDs, floppy drives, tape
- Network log-on
- Internet and E-Mail
- Conversions from Mac /PC, PC/Mac
- Import and Export Images
- InDesign, Illustrator
- PhotoShop and Clipart
- Adobe Type Manager
- Font Management and Manipulation
- Printing Proofs
- Web vs. traditional artwork creation requirements
- Printer's, Crop and register marks
- Overlays and tints
- Thumbnail creation
- Type spec'ing
- Literature and Art
- Preparation for final output
- Destination: Print, Web, Projection

### Unit Activities - Demonstration of competency during production of live work

- Use of color wheel for design
- Letterspace, Kerning and Leading
- Paste-ups, traditional media creation
- Ruled page using ruling pen and triangle and t-square
- Thumbnails with and without t-square and triangle for comparison
- Create one- and two-color artwork with and without overlays
- Lecture, Demonstration, and Hands-on computer operation
- Design and print a book, CD, Booklet including illustration, text, images, and impositions
- Illustrate and print a passage from literature

### Student Assessment

Assessment via discussion, formal and informal quizzes and exercises in creating thumbnails, artwork, and correct printer's marks.

### Text:

Offset Printing Fundamentals, Handbook of Print Media  
Handbook of Print Media

## Unit Eight: Artwork Preparation: The Raster Image Processor

2 weeks

### Lesson or Unit Objective

Students will learn the characteristics of materials utilized in creating printed pieces.

### Unit Topics - A Review of:

- File Formats
- Raster Image Processor
- Interface with PC and Mac
- Film and Megaplate drivers
- File preparation for gripper, plate bend, and image area
- Printer's marks
- Exposure and density
- Evaluating a film or megaplate

### Unit Activities - Demonstration of competency during production of live work

- Demonstrate understanding of Raster vs. Vector and Bitmap images
- Review and create presets for RIP
- Load and unload megaplate material
- Load and unload negative material
- Mix and replenish chemicals for Megaplate and Film Processing
- RIP single- and multi-color job for each press
- RIP CMYK job for negative
- Scan to RIP
- Create color breakdown for RIP
- Troubleshooting RIP

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises in chemical mixing and handling.

### Text:

Offset Printing Fundamentals, Handbook of Print Media  
Handbook of Print Media

## Unit Nine: Printing Materials: Substrates

1 week

### Lesson or Unit Objective

Students will learn the characteristics of materials utilized in creating printed pieces.

### Unit Topics - A Review of:

- Paper and its manufacture
- Paper usage, the right paper for the job
- Paper weight and measurement
- Paper grain and its importance
- Paper color
- Felt side
- Other substrates

### Unit Activities - Demonstration of competency during production of live work

- Explore the print shop recording the various types of paper from labels
- Compare the papers visually without touch and guess types
- Compare papers using tactile senses
- Micrometer usage
- Spec appropriate ink for various substrates
- Field trip to paper mill

### Student Assessment

Assessment via observation, discussion, informal and formal quizzes and exercises in repetitive exposure to materials. Paper color naming contest.

### Text:

Offset Printing Fundamentals, Handbook of Print Media  
Handbook of Print Media

## Unit Ten: Printing Materials: Ink

1 week

### Lesson or Unit Objective

Students will learn the characteristics of materials utilized in creating printed pieces.

### Unit Topics - A Review of:

- Ink and its manufacture
- Choose, spec and use the right ink for various substrates
- Viscosity
- CMYK Progressives
- The method of applying on the press
- Transparent vs. Opaque
- Mixing to achieve PMS match
- Dot gain

### Unit Activities - Demonstration of competency during production of live work

- Field trip to ink manufacturing plant
- Mix inks to match PMS
- Spec colors for 3 color job and mix

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes, and exercises in ink mixing. Evaluation of exercises.

### Text:

Offset Printing Fundamentals, Handbook of Print Media  
Handbook of Print Media

## Unit Eleven: Printing Materials: Chemicals

2 weeks

### Lesson or Unit Objective

Students will understand the importance of safety when handling chemicals, and mixing and measuring of chemicals to achieve proper results. Chemical interactions, and pouring techniques will be covered. Solvents and their uses in the print shop, as well as labeling and replenishment,

### Unit Topics - A Review of:

- Solvents and their handling
- Blanket Wash and its uses
- Roller Cleaners
- Lubricants for maintenance
- Fountain Solution mixing and pH
- Pumice and abrasives
- Blanket repair techniques

### Unit Activities - Demonstration of competency during production of live work

- MSDS Sheets
- Right-to-Know Laws review with new findings or chemicals
- Mixing fountain solution and measuring pH
- Refilling and labeling all blanket wash dispensers
- Removing and Cleaning rollers of ink and debris
- Removing and Cleaning blanket of ink and debris
- Removing, Installation and Cleaning plates of ink and debris

### Student Assessment

Assessment via observation, discussion, informal and formal quizzes and exercises in practical application.

### Text:

Offset Printing Fundamentals, Handbook of Print Media  
Handbook of Print Media

## Unit Twelve: Measurement

1 week

### Lesson or Unit Objective

Students will learn the importance of measurement and be able to measure linear dimensions with an accuracy tolerance of 1/32 inch. Measurement of liquids, inks, and weights.

### Unit Topics - A Review of:

- Measurement to 1/32 of an inch
- Paper counting techniques
- Creating a cutting diagram to determine best cuts
- Handling, Measuring and mixing fountain solution pH
- Handling, Measuring and mixing development and fixer solutions
- Handling, Measuring and mixing plate making chemicals

### Unit Activities - Demonstration of competency during production of live work

- Demonstrations of safe and proper mixing procedures
- Draw complex cutting diagrams
- Paper count accuracy

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and measuring and counting.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Thirteen: Maintenance Overview

1 week

### Lesson or Unit Objective

Students will learn the importance of properly maintaining mechanical equipment to prevent breakdowns.

### Unit Topics - A Review of:

- Safety first
- Tag and Lockout procedures
- Record-keeping
- Scheduling of maintenance
- Types of lubricants
- Types of inspections
- The importance of listening

### Unit Activities - Demonstration of competency during production of live work

- Prepare a tag for maintenance of common equipment
- Design a lockout procedure for performing maintenance
- Recreate a schedule for maintenance of common equipment
- Research, design and create a record-keeping system
- Handle lubricants
- Inspect all pieces of equipment

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises in creating schedules on computer, and on paper.

### Text:

Offset Printing Fundamentals, Handbook of Print Media  
Handbook of Print Media

## Unit Fourteen: Cutter Operation

1 week

### Lesson or Unit Objective

Students will learn how to properly operate the Polar Eltromat Guillotine cutter

### Unit Topics - A Review of:

- Safety
- Maintenance and Lubrication
- Determine Cut Size
- Setting Back Gauge
- Accommodation of materials
- NCR Impression Bar
- Clamp pressure adjustment
- Blade Sharpness and replacement procedures

### Unit Activities - Demonstration of competency during production of live work

- Inspect all lubrication points
- Review Operator's Manual
- Cut paper to pre-determined size
- Remove and replace blade

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and review of materials presented. Actual cutting of paper and subsequent measurement for accuracy.

### Text:

Offset Printing Fundamentals, Handbook of Print Media, Polar Operator's Manual  
Handbook of Print Media



## Unit Fifteen: Camera Operation and Photography: Principles of Light

2 weeks

### Lesson or Unit Objective

Students will learn how to properly operate cameras, from small snapshot film or digital, to the large format and horizontal line cameras.

### Unit Topics - A Review of:

- Digital Cameras / Film Cameras
- Scanners and Scan software / File formats
- Resolution / .JPEG / .TIFF / .GIF
- Modes: Grayscale / RGB / CMYK
- Photography and composition
- Exposure: Aperture and Speed
- Reflection and Refraction
- Interaction with light and dark
- Balance and color
- Effects of direction of incidence of light
- Use of safelights

### Unit Activities - Demonstration of competency during production of live work

- Scan or Photograph, Download, and Print images
- Find pictures in magazines showing lighting inconsistencies
- Review Prism examination and breaking color into its component parts
- Take pictures with natural, ambient, sunlight, fluorescent, and incandescent

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and examination of pictures taken. Visual assessment of photos shot.

### Text:

Offset Printing Fundamentals, Photograph basics video handbook, Handbook of Print Media  
Handbook of Print Media

## Unit Sixteen: Camera Operation and Photography: Framing the Image

2 weeks

### Lesson or Unit Objective

Students will learn how to properly shoot a photograph for best results in attaining all pertinent information and image.

### Unit Topics - A Review of:

- Excess Coverage and its requirements for printing
- Resolution requirements
- Balance and composition with accommodation for final use
- Horizon point recognition and importance
- Benefits and Pitfalls of Portrait and Landscape orientation

### Unit Activities - Demonstration of competency during production of live work

- Photograph images in various orientations
- Cropping and editing images in PhotoShop
- Field trip to museum

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and computer image manipulation

### Text:

Offset Printing Fundamentals  
School of Modern Photography text  
Handbook of Print Media

## Unit Seventeen: Camera Operation and Photography: Camera as Tool

2 weeks

### Lesson or Unit Objective

Students will learn the mechanics of camera operation.

### Unit Topics - A Review of:

- Photojournalism, Portrait, Landscape, Art, Reproduction
- Depth of Field and Aperture
- Shutter and Shutter speed adjustment
- Lenses and focal lengths
- Explanation of exposure compensations
- Film formats
- Slide and negative film
- Digital Photography

### Unit Activities - Demonstration of competency during production of live work

- Examine photo magazines
- Visit museums
- Shoot images showing depth of field
- Shoot images showing wide angle and telephoto lens effects
- Take pictures and download to computer
- Load and unload film

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and evaluating/inspecting the assigned photographs.

### Text:

Offset Printing Fundamentals  
School of Modern Photography text  
Handbook of Print Media

## Unit Eighteen: Camera Operation and Photography: Film/Plate Development

1 week

### Lesson or Unit Objective

Students will learn the techniques of film development.

### Unit Topics - A Review of:

- Safety with chemicals
- Chemical mixing and importance of temperature and light safe room
- Agitation
- Processors
- Saturation and Color Balance
- Future Trends

### Unit Activities – Demonstration of competency during production of live work

- Mixing chemicals and developing film
- Checking to ensure room is light tight
- What happens without agitation
- What happens with too hot/cold chemical

### Student Assessment

Assessment via discussion, traditional photography in print is being superceded by digital photography

### Text:

Offset Printing Fundamentals  
School of Modern Photography text  
Handbook of Print Media

## Unit Nineteen: Camera Operation and Photography: Contone/Halftone/Line

1 week

### Lesson or Unit Objective

Students will learn the different types of photographic reproduction.

### Unit Topics - A Review of:

- Continuous tone photographs vs digital images
- Grain and film speed and camera settings
- Halftone images
- Line shots
- Quick plates
- Dot and dot gain effects

### Unit Activities - Demonstration of competency during production of live work

- Comparison of contone, halftone and line shots
- Magnified view of contone image
- Hunt through magazines and pull and label image types

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and evaluate choices made in magazine hunt.

### Text:

Offset Printing Fundamentals  
School of Modern Photography text  
Handbook of Print Media

## Unit Twenty: Camera Operation and Photography: Quality Assessment

1 week

### Lesson or Unit Objective

Students will learn the critical characteristics necessary for acceptable photography.

### Unit Topics - A Review of:

- Density of negative / image
- Clarity /sharpness of image
- Contrast / Brightness / Curve Adjustments (digital)
- Reticulation / Scratches / Fogging
- Lens flare
- Color balance / saturation
- Troubleshoot processors

### Unit Activities - Demonstration of competency during production of live work

- Shoot negatives of various items with different reflectance values
- Using the loupe and exploded view computer to examine the fine details of images
- Comparison of Stouffer strips for each item shot
- Troubleshooting scratches or fogging
- Examine resolution issues

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises in shooting and examining films.

### Text:

Offset Printing Fundamentals  
School of Modern Photography text  
Handbook of Print Media

## Unit Twenty-One: Stripping: Starting Right

1 week

### Lesson or Unit Objective

Students will learn to prepare jobs for plating. They will learn reasons for, and specifics of, preparation for each press in the shop, as well as technology improvements that are their equivalent in the pre-press software-aided creation of plates. The importance of care and attention to detail will be stressed, as well as the current move toward direct to plate technologies.

### Unit Topics - A Review of:

- Evaluating the negative
- Workflow, determining the steps to be followed in production
  - Transferring job ticket information to the flats / investigate .JDF
  - Determining the paper orientation and print technique (work & turn / tumble, etc.)
  - Create a New File Folder or record information on the Current File Folder
- Measurements and Steps to Stripping Negatives
  - Paper Size
  - Centerline
  - Gripper Margin
  - Bend
  - Bleeds
  - Crop Marks
  - Register Marks
  - Pin Register
  - Goldenrod Paper
  - Schematics
- Cutting Masks
- Opaque and Scribe

### Unit Activities – Demonstration of competency during production of live work:

- Handling live jobs from negative creation to stripping and opaquing
- Handling live jobs from scanning or input creation to output to DPM imagesetter
- Creating new job folders and review current file folder organization

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises assisting in live job production. Creation of Dylux prints, and proofing printers.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Twenty-Two: Plate Making (Mega and Metal)

1 week

### Lesson or Unit Objective

Students will learn characteristics of light, importance of safety, and careful handling skills. They will also learn the means of, and reasons for, registration and alignment, screen tints and multiple image burns.

### Unit Topics - A Review of:

- Safety
- Orientation
- Pin Register
- Alignment
- Actinic light
- Double Burns
- Step and Repeat
- Screens and Tints
- Hand development vs. Processor development
- Dylux and printer sheets for proofing purposes

### Unit Activities - Demonstration of competency during production of live work:

- Plate preparation in production of live work.
- Polyester plate preparation in production of live work
- Work requiring multiple burns, tints and step and repeat will be utilized.
- Dylux prints and digital proofs will be made and trimmed to check for final okay.

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises. Examination of Dylux prints and any live work needed on a rush basis.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media



## Unit Twenty-Three: The Printing Press: The Basics

1 week

### Lesson or Unit Objective

Students will learn the safety issues with the offset duplicator. Each machine will require repeat of this unit(s). Maintenance, Lubrication and Work Area cleanliness will be covered.

### Unit Topics - A Review of:

- Safety: personal and equipment
- The importance of regularly scheduled maintenance
- Tagging and lockout procedures
- Unsafe condition reporting procedures
- Recording keeping
- Importance of work area orderliness and organization

### Unit Activities - Demonstration of competency during production of live work:

- Student will review maintenance schedules
- The side panels of the press will be removed and the proscribed lubrication and maintenance will be performed.
- Unsafe equipment will be tagged and reported.
- Record keeping system perfected.
- Cleanup of press and press area

### Student Assessment

Assessment via discussion, observation, informal quizzes and exercises in production of live work.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Twenty-Four: The Printing Press: Plate and Blanket

1 weeks

### Lesson or Unit Objective

Students will learn the role of the plate and blanket in production of printed materials. They will understand the necessary requirements for top performance of materials. They will learn the various types of securing means, and adjustment procedures. Students will learn when a blanket needs to be replaced, how to replace it, and how to repair a blanket if possible. The care and cleaning of plates and blankets will be reviewed.

### Unit Topics - A Review of:

- Safety
- Blanket identification
- Blanket and plate evaluation and relationship
- Pin-Bar vs. Clamp mounting
- Blanket repair
- Blanket replacement
- Cleaning the blanket
- Cleaning the plate
- Removing imperfections in plates
- Repairing plates on the press
- Horizontal movement of image
- Vertical movement of image
- Adjusting skew of plate.

### Unit Activities - Demonstration of competency during production of live work:

- Hands-on exercises with complex live work
- Hands-on exercises with Removal and replacement of blanket
- Hands-on exercises with Removal and replacement of plate
- Reading chapters in textbook

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises in live work production.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Twenty-Five: The Printing Press: Feed System

1 week

### Lesson or Unit Objective

Students will learn the means of setting the press to receive paper.

### Unit Topics - A Review of:

- Safety
- Proper alignment of guides
- Vacuum adjustment
- Blast adjustment
- Sheet separation
- Table Height adjustment and settings for use with various papers
- Sucker feet assessment
- Paper transfer from Feed Table to Delivery Table
- Paper path
- Register and repeatability

### Unit Activities - Demonstration of competency during production of live work:

- Read from text
- Operator producing and assessing quality of live work
- Loading and running live work

### Student Assessment

Assessment via discussion, observation, informal and informal quizzes and exercises in the production of live or pre-positioned work.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Twenty-Six: The Printing Press: Water and Ink Fountains

1 week

### Lesson or Unit Objective

Students will learn the important balance of ink and water and the application of each to the press being operated. They will study different types of water systems, and the importance of pH and surface tension issues in the production of acceptable printing.

### Unit Topics - A Review of:

- Safety
- How to Mix Fountain Solution
- Measuring pH and mixing to achieve proper pH
- Achieving the proper ink/water balance
- Proper technique for filling of ink fountain
- Viscosity
- Color and color mixing
- Pantone Matching System Spot Color vs. Process Color
- Adjustment of keys in application of ink for evenness

### Unit Activities - Demonstration of competency during production of live work:

- Textbook readings
- Preparation and assessment of live work with an eye toward ever more challenging tasks
- Exercises in demonstrating and guiding students as mentors/instructors

### Student Assessment

Assessment via discussion, written and informal and formal quizzes and exercises in the production of live work.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Twenty-Seven: The Printing Press: The Rollers

1 week

### Lesson or Unit Objective

Students will learn the reason and role of each roller in the press including oscillating rollers, impression cylinder, and form rollers. Measuring and adjusting roller pressures to assure even ink distribution.

### Unit Topics - A Review of:

- Safety
- The water fountain rollers and their importance
- The ink fountain rollers, their role and importance
- Oscillating rollers and their role
- Impression cylinder
- Measuring roller to roller pressures
- Adjustment of pressures to ensure even distribution of ink and water
- The sequence of rollers and the importance of even ink distribution

### Unit Activities - Demonstration of competency during production of live work:

- Hands-on exercises with all rollers and clean and examine for wear
- Hands-on exercises with the measurement of roller tolerance and compare with specifications in manual
- Textbook readings on roller sequence and role
- Instruct underclassmen on the techniques and practices in production of printed materials

### Student Assessment

Assessment via discussion, observation, formal and informal quizzes and exercises in press cleaning and operating.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Twenty-Eight: The Printing Press: Delivery System

1 week

### Lesson or Unit Objective

Students will learn the path taken by paper in its journey from feed table to delivery table. Students will understand the function of guides and grippers, jogging, stops, and the need for powder application for certain jobs.

### Unit Topics - A Review of:

- Safety
- The movement of paper from the feed table to the image application
- The types of grip utilized by the press to handle the paper and pass it from one station to another
- The application of vacuum and blast to achieve single sheet feed
- The function of multi-sheet stops and trips to prevent multiple sheet feeding
- The importance of repeatability and jogging
- Adjusting the delivery side guides
- Adjusting for sheet drop
- Adjustment of the table drop in the delivery system
- The application of powder to aid in preventing offset

### Unit Activities - Demonstration of skill assisting in:

- Textbook readings
- Hands-on exercises with Production of live work
- Instruct underclassmen on the techniques and practices in production of printed materials

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises in production of live work. Constant monitoring of Competency Sheets is essential.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Twenty-Nine: The Printing Press: Inspection

1 week

### Lesson or Unit Objective

Students will learn the techniques necessary to ensure the work is of top quality. Students will learn how to look for hickeys, toning, scumming, offset, skew, coverage, and positioning of image on the sheets.

### Unit Topics - A Review of:

- Safety when removing sheets from the press
- Pulling sheets at regular intervals to inspect
- The importance of adequate lighting conditions
- Attention to detail
- Check both sides: Image Offset: where it comes from and how to eliminate it
- Toning and how to avoid it
- Scumming
- Troubleshooting defects
- Dot Gain
- Even ink application and how to compensate for excess or unequal coverage

### Unit Activities - Demonstration of competency during production of live work:

- Textbook readings
- Production of live work
- Instruct underclassmen on the techniques and practices in production of printed materials

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises in production of live work. Constant monitoring of Competency Sheets is essential.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Thirty: The Printing Press: Image Adjustment

1 week

### Lesson or Unit Objective

Students will learn how to move and adjust paper and plate to achieve proper alignment on the press, and ink and water adjustments to achieve maximum quality.

### Unit Topics - A Review of:

- Safety
- Adjusting for plate imperfections
- Removal of debris on plate or blanket
- Adjustment of keys on ink fountain to accommodate heavy areas
- Adjustment of water fountain to accommodate ink usage
- Clamp movement to adjust skew
- Blanket cylinder adjustment for vertical alignment
- Feed table guide adjustment for horizontal alignment
- Folding and measurement

### Unit Activities - Demonstration of competency during production of live work:

- Textbook readings
- Production of live work
- Hands-on exercises with production of live work
- Instruct underclassmen on the techniques and practices in production of printed materials

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises in the production of live work. Constant monitoring of Competency Sheets is essential.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media



## Unit Thirty-One: The Printing Press: The Press Run

1 week

### Lesson or Unit Objective

Students will learn the how to operate the press to produce a work of superior quality.

### Unit Topics - A Review of:

- Safety
- Attention to detail
- Ink and water balance
- The inspection for imperfections
- Setting the counter
- Industry standards for over/under quantities
- Fulfilling the quantity requirements
- Handling work not yet completely dry
- Impact/role of speed in the quality of work
- Ink transfer as related to paper surface and absorption

### Unit Activities - Demonstration of competency during production of live work:

- Textbook readings
- Production of live work
- Instruct underclassmen on the techniques and practices in production of printed materials

### Student Assessment

Assessment via discussion, observation, formal and informal quizzes and exercises in the production of live work. Review of material produced over the course of the year to determine weaknesses and strengths. Constant monitoring of Competency Sheets is essential.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Thirty-Two: Bindery Overview

2 weeks

### Lesson or Unit Objective

Students will learn the role of each piece of equipment in the bindery operation.

### Unit Topics - A Review of:

- Safety
- Maintenance
- Vacuum and Blast
- Gate setup
- Static Electricity
- Paper feed and handling
- Paper weights and grains
- Measurement and diagrams
- Count and industry standards
- Inspection and packaging
- Packaging

### Unit Activities - Demonstration of competency during production of live work:

- Textbook readings
- Production of live work
- Instruct underclassmen on the techniques and practices in production of bound materials

### Student Assessment

Assessment via discussion, observation, informal quizzes and exercises in the production of live work. Constant monitoring and updating of Competency Sheets and portfolio are essential.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Thirty-Three: The Folder

1 week

### Lesson or Unit Objective

Students will learn the safe operation of the folder.

### Unit Topics - A Review of:

- Safety
- Maintenance and lubrication
- Paper feed adjustments
- Guides and importance of parallel
- Air adjustment, blast and vacuum
- Folding gate measurement and adjustment
- Delivery guides and wheel adjustment
- Inspection and packaging

### Unit Activities - Demonstration of competency during production of live work:

- Textbook readings
- Production of live work
- Instruct underclassmen on the techniques and practices in production of folded materials

### Student Assessment

Assessment via discussion, informal and formal quizzes and exercises in the production of live work, as well as constant monitoring of Competency Sheets and portfolio.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Thirty-Four: The Booklet Maker

1 week

### Lesson or Unit Objective

Students will learn the maintenance and operation of the booklet maker.

### Unit Topics - A Review of:

- Safety
- Maintenance
- Staple loading
- Guide placement
- Adjustment for finish size
- Inspection
- Count
- Packaging

### Unit Activities - Demonstration of competency during production of live work:

- Textbook readings
- Production of live work
- Instruct underclassmen on the techniques and practices in production of bound materials

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises in the production of live work. A constant monitoring and updating of Competency Sheets and portfolio are necessary.

### Text:

Offset Printing Fundamentals  
Owner's Manual for Specific equipment  
Handbook of Print Media

## Unit Thirty-Five: Wrapping

1 week

### Lesson or Unit Objective

Students will learn the importance and means of packaging for both product integrity and appearance. They will learn the importance of the appropriate packaging for the job.

### Unit Topics - A Review of:

- Safety
- Package specifications (weight and stacking limits)
- Importance of Cleanliness and labeling issues
- Packing materials

### Unit Activities - Demonstration of competency during production of live work:

- Production of live work
- Instruct underclassmen on the techniques and practices in production of packaged materials

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises in live work.

### Text:

Offset Printing Fundamentals  
Handbook of Print Media

## Unit Thirty-Six: Delivery

1 week

### Lesson or Unit Objective

Students will learn the importance of customer relations and courtesy.

### Unit Topics - A Review of:

- Safety
- Lifting guidelines
- Record keeping issues and tracking of packages
- Labeling and clarity of records
- Telephone skills
- Courtesy in delivery
- Leaving the customer in positive frame of mind
- Acceptable procedures for delivery and return (speeding vs. dallying)

### Unit Activities - Demonstration of skill assisting in:

- Delivery of packages within the school
- Phone notification of packages to be picked up
- Timed deliveries within the building in the course of production and finishing of live work.
- Instruct underclassmen on the techniques and practices standard to the industry.

### Student Assessment

Assessment via discussion, observation, informal and formal quizzes and exercises in delivery and phone notification of live work. A constant monitoring of Competency Sheets and delivery slips is essential.

### Text:

Offset Printing Fundamentals

Handbook of Print Media

## Unit Thirty-Seven: Life After High School

2 weeks

### Lesson or Unit Objective

Students will be introduced to effective methods of acquiring a job and/or a college education.

### Unit Topics - An Introduction to:

- Job Search
- Applying to College — Basic Requirements
- Portfolio Assembly

### Unit Activities - Exercises in:

- Demonstrate methods of locating work
- Write a resume and cover letter
- Write a follow-up resume
- Assess personal hygiene and appearance
- Fill out a job application
- Take an employment test
- Role play a job interview
- Research colleges and universities
- Fill out college application
- Write a college essay
- Paying for an education

### Student Assessment

Finish, send and begin interviewing employment or acceptance to a college or university.

### Text:

Various Student Support Services documents, newspapers, exemplars, brochures, forms.  
Handbook of Print Media





Vocational Graphic Communications III  
(Course No. 665)

Career and Technical Education Department

Waltham High School  
Waltham, Massachusetts

Competency Record Chart

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# COMPETENCY RECORD CHART

GRAPHIC COMMUNICATIONS / Course #

CLASS LEVEL

<b>LEGEND</b>	1	Instructed
	2	Demonstrated (can perform with assistance)
	3	Competent (can perform in a reasonable time without assistance)

	STUDENT NAME				STUDENT NAME		
	1	2	3		1	2	3
<b>SAFETY</b>				Determine best path to reach greatest audience			
List and define OSHA Health and Safety Regulations, EPA and other regulations				Research employment positions & compare/contrast their descriptions, duties, and expectations.			
List and define Right to Know regulations and reporting health and safety agencies.				Prepare responses to standard interview questions.			
List the laws and rules of regulatory agencies governing sanitation and safety.				Participate in a mock-interview with industry professionals.			
Identify, describe and demonstrate the use of MSDS.				Review and create a professional journal			
List and demonstrate shop dress code, safety procedures				Develop oral presentation regarding an article in a journal. Summarize trends presented in a graph.			
Define & demonstrate safe storage & maintenance of equipment				Present internet research based upon the history of graphic communications and summarize and organize ideas and present findings to an audience verbally and electronically.			
Define first aid procedures & practices to avoid accidents.				<b>BUSINESS: INDUSTRY STANDARDS AND ETIQUETTE</b>			
Operate work environment equipment safely.				Answer telephone with confidence and convince customer to visit with job to be printed			
Maintain a clean and orderly work environment.				Greet customer and listen carefully to their request and determine their need			
Maintain safety records and document injuries.				Interact with client and accept printing request			
Comply with company personnel (PPE) policies				Collect all necessary information to satisfy production process requirements.			
Comply with safety requirements for operating binding, finishing, and mailing equipment				Complete order entry forms and methods to prepare quote			
Use proper procedures to ensure safety devices are working.				Collaborate with specialists to determine path of workflow to deliver high quality product			
Follow shop reporting procedures for unusual wear, machine noises, and other faults.				Determine equipment, processes, and labor costs anticipated in chosen path			
<b>EQUIPMENT:</b>				Contact customer with written quotation, terms, delivery options and signed job order			
Computer: Mac / PC				Create a plan to keep track of tools and supplies in your classroom/shop.			
Digital Printers: HP / Xerox / Xante				<b>BUSINESS: ENTREPRENEURSHIP</b>			
Inkjet Printers: HP 800ps / Ricoh Dye Syb				Prepare a business plan for a new company			
3D Printers: Makerbot 2 / Makerbot Mini				Participate in a discussion of a local small-business incubator or chamber of commerce, identifying opportunities and summarizing best practices of new companies.			
Offset: Hamada 600 / Multi / AB Dick				Create an equipment list, with costs of equipment required for doing specific tasks.			
Bindery: Cutter / Booklet / Baumfold / Heat Press /				Identify local zoning and environmental laws that apply to businesses in your industry.			
Bindery: Collator / Challenge Drill / Laminator / Coil / GBC				Work as a team to complete a project, including running and participating in problem-solving meetings.			
Finish: Shrink Wrap				Explore relevant professional organization & request information about benefits, requirements, & costs.			
<b>ROLE OF GRAPHICS: ALL ASPECTS OF INDUSTRY</b>				Clip print advertisements from local companies, identifying common themes and contrasting different styles.			
Define paths used to disseminate information to large audience over course of history. <i>Equipment, etc.</i>							
Create an image that contains a message of for each of the following: 10,000 BCE, 5,000 BCE, 500 AD, 1500 AD, 1775 AD, Today							
Decide hierarchy of importance shown in above.							
Define consequences of failure to reach intended audience.							

Create and follow a budget	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identify equipment in your shop/lab that considered capital.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
From a pay-stub, determine gross salary, deductions, and net pay for a calendar year.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create a rate card or other list of standardized costs for services provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participate in and summarize a discussion with a member of a labor organization.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participate in and summarize a discussion with a member of a civil rights organization.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
While participating in a group project, write and follow job descriptions for each member of the team.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Evaluate a shop in terms of safety, ergonomics, & workflow.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participate in a service project or community-centered event.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compare, order, estimate, and translate among fractions & mixed numbers, decimals & percentages to perform stock cutting calculations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>DESIGN: SUBSTRATES</b>			
Define substrates & record findings with proper citation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identify paper Characteristics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>DESIGN: ELEMENTS OF DESIGN</b>			
Students will demonstrate the use of principles and elements of design including: balance, contrast, unity, rhythm, proportion, line, shapes, mass, texture, and color.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Choose typstyles, fonts, colors to be used in production	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collect samples of vector and raster images.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>DESIGN: CREATION OF ARTWORK</b>			
Evaluate information from a variety of sources in a consistent and standard format, and present research.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create printed piece identifying aesthetic effects of a media presentation & identify & evaluate techniques used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Design and layout a stationary package to include the following: letterhead, business card, envelope.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Locate and store in appropriate folder all images and text to be used in finished artwork	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create Thumbnails	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create Rough Comps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create Tight Comp and / or dummy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using ratios and proportions calculate photographs and artwork to proper size for placement into a page layout.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Using rules of typesetting, determine font sizes, line lengths & page layout characteristics & create a mock-up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create artwork to reflect gripper margin requirements output device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manipulate a raster image with image-editing software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manipulate a vector image using drawing software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create artwork and provide proof for approval.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create artwork following rules of contrast, repetition, alignment and proximity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Make changes/corrections & create PDF file for proofing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Submit artwork for proofreading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Upload PDF proof to protected cloud-based server for remote customer access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Review customer comments, changes, or alterations and repeat as necessary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Design and layout a brochure using correct resolution, bleeds, and trim specifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create finished artwork for use on multiple output platforms (i.e. web, print, mobile device)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>PHOTOGRAPHY/SCANNING:</b>			
Identify & explain application of light in communications, e.g., reflection, refraction, additive, and subtractive color theory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acquire color image using desktop scanner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acquire high contrast black & white image using scanner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acquire pre-printed image avoiding moiré effect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acquire image through use of digital camera	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create a portrait photo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create a landscape photo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create product shot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create background image for print and web	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Edit images in image-editing software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>PRE-PRESS: WORKFLOW</b>			
Receive, interpret and configure native file for PDF output for appropriate output device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repurpose customer file for use on requested output platforms (i.e. web, print, mobile device)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compare, order, estimate and translate figures to calculate ink, stock material sheet layout ratio and proportions required to complete and price a job and compile a budget.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create a basic trouble shooting worksheet/flowchart to correct basic computer problem(s).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compare characteristics of various ink vehicles & how they relate to drying on various substrates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create a comparison chart from the ink draw down results.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Output PDF file for intended use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>PRE-PRESS: TYPOGRAPHY</b>			
Create typography specimen booklet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identify and label parts of a type character	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collect various type classification samples	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group type according to type families	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collect various alignment samples of type	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Collect samples of body and display type	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Build and prepare a document, including, trapping, preflight, creating and inspect proofs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>PRE-PRESS: ARTWORK</b>			
Prepare and/or correct a document for output.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Send job to RIP adjusting for center vertically& horizontally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Set up duplex and arrange for registering both sides.

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Demonstrate effective use of crop marks and bleeds.

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Adjust color balance for best results.

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Produce 48 page dummy for electronic imposition.

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Compare and contrast the characteristics of additive and subtractive color formation.

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**PRINTING: FLEXO / LITHO / DIGITAL / GRAVURE / LETTERPRESS/DYE-SUB/3D**

Discuss and compare methods of printing

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Explore equipment & supply costs & expenses of each method & when to consider each.

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**PRINTING: OFFSET**

Set up offset press to print

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Properly measure & mix ink, differentiating between weight & mass, recognizing that: weight is the amount of gravitational pull on an object & measurement of volume and mass requires understanding of the sensitivity of measurement tools & knowledge & appropriate use of significant digits.

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Perform make ready on an offset press.

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Install offset blanket

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Mix and measure fountain solution for plates being utilized

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Set water/ink balance

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Load substrate

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Adjust side-guides

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Adjust delivery bin

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Adjust/set powder delivery

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Produce 500 sheets of a single color document.

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Demonstrate use of quality control standards & techniques.

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Perform press wash-up

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**PRINTING: DIGITAL**

Acquire department authorization code for charge-back

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Complete the job ticket by filling in all applicable information

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Load bins with specified paper

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Ensure proper feed orientation for work being processed

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Ensure proper commands on print dialogue boxes

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Print single piece and check for defects

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Monitor copies to ensure consistent quality

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Compare finished work with description on job ticket

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**PRINTING: INK-JET INCLUDING WIDE FORMAT**

Acquire department authorization code for charge-back

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Complete the job ticket by filling in all applicable information

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Load platen with specified paper

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Ensure proper feed orientation for work being processed

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Ensure proper instructions on print dialogue boxes

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Begin print and monitor to ensure consistent quality

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Compare finished work with description on job ticket

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**PRINTING: DYE-SUB**

Acquire department authorization code for charge-back

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Complete the job ticket by filling in all applicable information

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Load tray with specified paper

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Ensure proper feed orientation for work being processed

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Ensure proper instructions on print dialogue boxes

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Print transfer paper

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Set heat-press (mug-press) with proper time/temperature/pressure settings

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Inspect for errors and consistent quality

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Compare finished work with description on job ticket

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**PRINTING: 3-D**

Acquire department authorization code for charge-back

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Complete the job ticket by filling in all applicable information

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Load feeder with specified filament material

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Ensure proper instructions on print dialogue boxes

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Monitor print at regular intervals to ensure consistent quality

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Compare finished work with description on job ticket

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**BINDERY: PAPER CUTTING**

Compute total yield of print job through modeling using systems of linear equations or inequalities.

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Solve everyday problems by applying algebraic and graphical methods to the solution.

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Use appropriate technology as necessary.

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Cut 23"x35" stock into 11.25"x17.25"using stock\_cutting math procedures

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Cut 23"x35" stock into 11.25"x17.25"using stock cutting math procedures

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Cut 10-up business cards to 3.5" x 2" finished size

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Face-trim brochures to ensure square finish

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**BINDERY: FOLDING**

Fold 8.5" x 11" stock to 5.5" x 8.5" finished size

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Fold 8.5" x 11" stock to fit #10 envelope

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Fold 11.25"x17.25"stock to 8.625"x 11.125"

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Explore 90 degree folding techniques

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**BINDERY: PADDING**

Set up adhesive binding (padding).

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Set up paper cutter to cut stock for 10 pads that measure 5.5 x 8.5 with chipboard backing.

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Slip sheet pads in count indicated by job specifications

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Jog and load sheets onto padding press.

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Clamp and apply padding compound.

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Clean all tools and work area.

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Separate pads into finished product.

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**BINDERY: COLLATING**

Hand collate simple multi-page job

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Machine collate job using multiple bins

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Create spreadsheet and matching artwork to merge into variable data output for mailing

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Number and collate twelve folded signatures into a 48 page dummy.

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**BINDERY: STITCH/COIL/GBC/PERFECT**

Set up and saddle stitch brochures

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Set up and GBC bind booklets

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Set up and coil bind booklets/books

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Set up and perfect bind books

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**BINDERY: MISC 3-HOLE PUNCH / SCORE / PERFORATE**

Set up perforation- Align perforation wheels to perforate sheet at designated location and size.

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Set up & drill for standard 3-hole position & drill dummy.

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**FINISHING:**

Perform final trims on live work

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Laminate finished sheets of paper

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Shrink wrap finished work

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Craft paper wrap finished work

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Select proper size and weight box and pack finished work

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Fill delivery slips and deliver finished work to client

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**LIFETIME WORK SKILLS**

Demonstrate productive work habits and attitudes

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Demonstrate good attendance

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Demonstrate punctuality

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Demonstrate time management skills

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Demonstrate initiative

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Demonstrate ability to work in team setting

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