Oklahoma CTE

Press Operations, Binding and Finishing (2013)

Adopted 2013

Introduction to Graphic Communications

G. Press Operations

1. Identify basic safety press procedures.
2. Identify basic press systems.

H. Bindery Operations

6. Create an accurate master cutting diagram for making cuts.

I. Measurement

3. Measure volume for mixing chemicals for pressroom operations.

J. Basic Math

18. Solve basic paper cutting calculations.
19. Solve word problems that require an understanding of estimating.

Offset Press Operations

1. **Read and interpret production information on job docket/ticket.**
2. **Explain how an offset lithographic plate works.**
3. **Identify and demonstrate safe work habits in press operations.**
4. **Identify basic systems and parts of an offset press.**
5. **Describe the attributes of sheet-fed, web-fed, stream-fed, and perfecting presses.**
6. **Identify the printing processes used in the press segment of the printing workflow.**
7. **Identify basic types, sizes and weights.**
8. **Determine grain direction of paper and explain the importance of proper grain direction on press, including folds and scoring.**
9. **Handle and jog paper stock (wire/felt, watermarks, and carbonless sequence).**
10. **Locate paper weight, coating, and sizes on a ream, box, or skid.**

11. Describe the importance of paper conditioning prior to running the press.
12. Demonstrate and correct paper problems prior to running the press.
13. Compare offset ink types and uses including oil-based, rubber-based, soy-based, and Ultraviolet (UV).
14. Identify ink ingredients.
15. Identify causes of ink problems and suggest appropriate solutions.
16. Explain the purposes of using spray powder on an offset press.
17. Explain the purpose of an infrared dryer on on offset press.
18. Describe the procedure for mixing and testing custom colored inks.
19. Explain the purpose and use of fountain solution and fountain solution additives.
20. Mix fountain solutions using appropriate ratios and demonstrate understanding and use techniques.
21. Perform make-ready steps for paper handling.
22. Perform make-ready of the inking system.
23. Perform make-ready of the dampening system.
24. Perform make-ready of the printing unit.
25. Print a single color one-sided job.
26. Print a single color properly registered two-sided job. Indicate gripper and side guides.
27. Print a single color properly registered job on carbonless stock (two parts or three parts).
28. Print a single color job on envelopes.
29. Print a job on heavy stock.
30. Describe sheetwise, work-and-turn, and work-and-tumble jobs, and how they differ.
31. Print a two-sided job using one of the following methods: sheetwise, work-and-turn, or work-and-tumble.
32. Explain the purpose of registration, crop, and bleed marks.

	33. Explain the major functions of a densitometer as a quality control device.
	34. Print a multicolor job with register marks and color bars. Maintain accurate registration and monitor ink density.
	35. Print a multicolor, two-sided job.
	36. Demonstrate the use of flags or count sheets during a press run.
	37. Perform roller care and maintenance of inking and dampening systems.
	38. Demonstrate ink roller, dampener roller, and cylinder pressure settings on a press.
	39. Install a blanket and explain follow-up procedures.
	40. Demonstrate proper wash-up techniques for the inking system, dampening system, and cylinders.
	41. Demonstrate a proper color wash.
	42. Identify problems inherent in printing heavy solid work on a duplicator press.
	43. Estimate small offset press labor costs to include make-ready, running, and clean-up.
	44. Estimate ink and paper costs.
	45. Observe offset press operations in a commercial printing plant either on site or online via a virtual tour.
	46. Explain procedures for daily, weekly, and monthly maintenance on a press; explain importance of recording the information in a log.
	47. Perform basic press maintenance and record the information in a log.
Binding and Finishing	1. Read and interpret production information on job docket/ticket.
	2. Identiy and demonstrate proper safety considerations when working with bindery equipment.
	3. Practice safe work habits when working with bindery equipment.
	4. Describe how to change the blade and perform preventive maintenance on an automatic paper cutter.
	5. Estimate the cost of materials and production for performing various bindery operations.
	6. Identify basic hand tools, equipment, and materials in bindery operations.

7. Demonstrate proper paper handling and storage procedures.
8. Demonstrate basic paper jogging techniques.
9. Demonstrate basic paper counting techniques; measure by ream marker, weight, caliper or other methods.
10. Demonstrate knowledge of paper types related to their grain direction, cutting, folding, and binding characteristics.
11. Calculate basic paper cuts from a parent sheet, considering job requirements and grain.
12. Describe how to use and set up programmable cutters.
13. Make accurate paper cuts using a mechanized paper cutter.
14. Demonstrate how to check the squareness of stock.
15. Collate sets in proper sequence.
16. Prepare folding dummies for commonly used impositions.
17. Define folding terminology and list different folding techniques.
18. Demonstrate the use of folding equipment to produce a single fold, an accordian fold, and a gate fold.
19. Describe and identify the uses of right angle folding, knife folding, buckle folding, and combination folding.
20. Demonstrate the use of folding equipment to produce a right-angle fold job.
21. Demonstrate and properly use folding equipment to produce a high-folio lip signature and a low-folio lip signature.
22. Describe tipping-in procedures.
23. Demonstrate the use of folding equipment to perforate and score.
24. Demonstrate and perform preventive maintenance on a folder.
25. Describe and identify in-line finishing systems.
26. Describe and identify off-line finishing systems.
27. Produce correctly made pads of paper.
28. Describe the fundamentals and applications of saddle stitching and perfect binding.

29. **Produce side and saddle stitched/stapled products.**
30. **Identify spiral binding and wire binding equipment and products.**
31. **Describe the case binding process.**
32. **Identify packaging and shrink wrap equipment and materials.**
33. **Identify specialty bindery processes; foil stamping, embossing, die cutting, and thermography.**
34. **Identify common production problems encountered in the bindery area.**
35. **Describe and identify basic mailing equipment.**
36. **Demonstrate an understanding of United States Postal Service (USPS) standards (sizes and mail class rates).**
37. **Observe a commercial bindery operation (live or virtual).**

Advanced Offset Press Operations

A. **Press Mechanics and Printing Systems**

1. Describe the major systems of a web offset press.
2. List the advantages and disadvantages of a web offset press vs. a sheetfed offset press.
3. Describe digital printing and the advantages and disadvantages compared to offset printing.
4. Describe and identify direct imaging technologies.
5. Identify various press feeding systems.
6. Identify various drying and dampening systems.
7. Explain the difference between conventional, compressible, and sleeve blankets, and their applications.
8. Perform preventive maintenance procedures on an offset press.
9. Remove, replace, and reset rollers, ensuring proper roller pressure and durometer.
10. Select and install a blanket and appropriate packing.
11. Describe antistatic and anti-marking systems and explain why they are used.

B. Offset Press Operations

1. Read and interpret production information on job docket/ticket.
2. Select the proper stock according to job specifications.
3. Describe and demonstrate the operational procedures for each of the controls and adjustments on the offset press.
4. Identify and use a mechanical control of registration on an offset press.
5. Identify and resolve mechanical press problems as they relate to quality controls.
6. Print a job on lightweight paper.
7. Print a multi-color, two-sided job on coated paper.
8. Print a job on card or board stock.
9. Print a heavy solid coverage on coated paper.
10. Describe various impositions for sheetfed and web offset presses.
11. Print a series of jobs using a variety of different impositions.
12. Explain how an infrared (IR) dryer works and the advantages and disadvantages of its use.
13. Explain the advantages and disadvantages of (UV) coating/printing.
14. Describe the use of color-controlled lighting in press sheet evaluation.

C. Process Color

1. Describe the difference between process and spot color inks.
2. Identify common problems in color reproduction and describe the solutions.
3. Describe the differences encountered in printing a process color job on coated and uncoated paper.
4. Print a process color job on uncoated paper.
5. Print a process color job on coated paper.
6. Interpret color bars on a press sheet to determine corrective actions, if necessary
7. Using color bars and a densitometer, measure solid ink density and tone value increase (TVI).

D. Printing Standards/Color Management

1. Describe color densitometry/spectophotometry principles and applications.
2. Describe and apply industry standards, such as Specifications for Non-Heatset Advertising Printing (SNAP) General Requirements for Applications in Commercial Offset Lithography (GRACoL), and Specifications for Web Offset Publications (SWOP), etc.
3. Adjust inking and/or dampening systems so that solid ink density matches print specifications (SNAP, GRACoL, SWOP, etc.).
4. Understand fountain chemistry requirements, including conductivity and pH.
5. Demonstrate the use of pH strips or meters and modify fountain chemistry accordingly.
6. Use conductivity and pH meters and interpret readings.
7. Set up, mix, and test ink for printing using color chart for mixing requirements.

E. Workflow and Automation

1. Describe the use of a press console in offset press operations.
2. Describe the use of Job Definition Format (JDF) in offset press operations.

F. Paper Characteristics

1. Describe paper characteristics as they relate to offset printing.
2. Identify various varnishes and coatings and describe the reasons for using each.