**CHAPTER 5: PRODUCTION**

**Printing**

**Print processes**

**On-press**

**Paper**

**Case study: NB Studio**

**Printing**

Student learning objectives

Upon successful completion of this lesson, the student should be able to:

* Discuss various printing processes and procedures.
* Identify potential problems that can occur during the printing process.
* Develop a plan to mitigate any potential printing problems.
* Recite multiple printing processes and the advantages of each.

Key terms

**Digital printing:** A printing method which uses toner rather than ink. (p. 136)

**Gradient**: Uses one or more colors that combine to create a color effect. (p. 146)

**Moiré pattern**: An effect caused by conflicting halftone screen angles. (p. 144)

**Printing imposition**: The arrangement of pages in the sequence and position in which they will be printed before being cut, folded and trimmed. (p. 142)

**Print order/RFQ (Request for quotation):** A document that communicates printing requirements for a job that includes the printing process to be used, stock, print run, special requirements such as die cuts or inks. Delivered to a printer before the job is run, it enables a printer to provide the designer with a potential cost for the job. (p. 136)

**Print order:** The sequence in which the different colors used in a job are laid down during the printing process. (p. 136)

**Screen angle:** Refers to the inclination or angle of the rows of halftone dots that are used to form color images in the four-color printing process. (p. 144)

**Sheet work:** Printing one side of a sheet of paper, turning it over and printing the other side with a separate plate. (pp. 142-143)

**Stochastic printing:** The use of different dot sizes and random placement to avoid the appearance of moiré patterns. (p. 145)

**Tint:** A color printed at a percentage of 10-90% of its full strength. (p. 146)

**Work and tumble:** Both sides of a sheet are set on one plate. The sheet is printed and turned over side to side to be printed again. (pp. 142-143)

**Work and turn:** Printing one side of a sheet, turning it from front to back and printing the second side with the same sheet-edge alignment on the press. (pp. 142-143)

**Work and twist:** Printing one half of the sheet, turning it 180 degrees and then going back through to print the other side. (pp. 142-143)

**Print Processes**

Student learning objectives

Upon successful completion of this lesson, the student should be able to:

* List the four main printing processes and the differences between them.
* Identify common problems with web and lithography printing.

Key terms

**Inkjet printing:** A printing methods whereby the ink is sprayed onto the substrate. (p. 152)

**Letterpress:** A method of relief printing whereby an inked, raised surface is pressed against a substrate. (p. 154)

**Lithography:** A process through which the inked image from a printing plate is transferred or offset on to a rubber blanket roller. (p. 152)

**Printing**: The process whereby ink or varnish from a printing plate is applied to a substrate. (p. 152)

**Screen-printing:** A relatively low-volume printing method in which a viscous ink is passed through a screen – originally made from silk – that holds a design, on to a substrate. (p. 155)

**Web printing:** Uses stock that is supplied in massive rolls rather than individual sheets. (p. 153)

**On Press**

Student learning objectives

Upon successful completion of this lesson, the student should be able to:

* Comprehend and practice making image correction marks.
* Understand the role of a designer on press checks.
* Explain the common steps/processes in checking color while on press.

Key terms

**Color densitometer:** A device that uses a light source and a photoelectric cell to measure optical density. (p. 156)

**Proof marking:** A process in which a designer and/or printer uses an eye glass to check color productions against the control strips and uses image correction marks to indicate adjustments to color, density, etc. (p. 156)

**Striker bar:** A horizontal bar containing a series of predefined colors printed along its edge for color checking. The bar includes additive and subtractive primaries and overprints. (p. 157)

**Paper**

Student learning objectives

Upon successful completion of this lesson, the student should be able to:

* List the paper qualities and characteristics a designer should be aware of when selecting paper.
* Describe the relevance of ‘sustainability’ to the role of the graphic designer in the 21st century.

Key terms

**Absorbency:** The degree to which ink penetrates the paper.

**Basis weight**: Used to specify paper weight in the US. (p. 158)

**GSM (Grams per Square Meter)**: Used to specify paper weight in the UK. (p. 158)

**Ink holdout:** The degree to which a stock resists ink penetration due to its relative lack of absorbency. (p. 160)

**ISO 14000:** An international standard that certifies that a company follows environmental management standards to minimize the negative impact on the environment. (p. 164)

**Opacity:** The extent to which whatever is printed on one side of a sheet of paper shows through and is visible on the other side. (p. 160)

**Paper grain:** A direction in which most of the paper fibers lie. (p. 158)

**Stock:** A substrate that a job is printed upon such as paper. (p. 160)

**Sustainable printing:** Includes processes that reduce the environmental impact of printing such as the use of recycled paper, minimized use of foils and varnishes, avoiding printing more than is necessary, etc. (p. 164)

**Chapter 5: Review questions**

1. List four different potential printing problems a designer should be aware of and look for during a press check. (p. 153)
2. In general, what is the difference between sheet-fed and web offset printing as relates to print runs and printing efficiencies? (p. 152)
3. Color can be adjusted on a printing press while the job is being printed. True or false? (p. 156)
4. What are some reasons color adjustments would be made while a job is being printed? (p. 156)
5. What is meant by ‘paper grain’? (p. 158)
6. The higher the GSM, the weightier the stock feels? True or false? (p. 158)
7. What are the four main processes used in the commercial printing industry? (p. 152)
8. Describe the process for checking color on a press check. (p. 156)
9. What is the impact of page imposition when it comes to color adjustments? (p. 157)
10. Name four different types of paper and their primary uses. (p. 161)
11. Name three advantages of digital printing. (p. 136)
12. Name at least four choices that will make a printing job more sustainable and environmentally sound. (p. 164)
13. Why should graphic designers be concerned with sustainable design? (p. 164)

**Chapter Five: Selected on-line resources**

# Pantone [www.pantone.com/](http://www.pantone.com/)

# Paper Specs [www.paperspecs.com/mainblog/chocolatl-packaging/](http://www.paperspecs.com/mainblog/chocolatl-packaging/)

Printing News [www.printingnews.com/](http://www.printingnews.com/)

Paper Companies

[consolidated](http://www.consolidatedpapers.com/home.html) [www.storaenso.com](http://www.storaenso.com)

[arjowiggins](http://www.curiouspapers.com/index1.html) creative papers [www.arjowigginscreativepapers.com](http://www.arjowigginscreativepapers.com)

[domtar](http://www.domtar.com/domtar/english/papiers.htm) [www.domtar.com](http://www.domtar.com)

[international](http://www.internationalpaper.com/our_brands/paper/fine_paper/fine_paper.shtml) [www.internationalpaper.com](http://www.internationalpaper.com)

[french](http://www.mrfrench.com/) [www.frenchpaper.com/Index.asp](http://www.frenchpaper.com/Index.asp)

[neenah](http://www.neenahpaper.com/) [www.neenahpaper.com](http://www.neenahpaper.com)

new leaf paper [www.newleafpaper.com/](http://www.newleafpaper.com/)

[strathmore](http://www.strathmore.com/html/home/2000Winter/index.wsf) [www.strathmore.com/index\_content.htm](http://www.strathmore.com/index_content.htm)

[yupo](http://www.yupo.com/) [www.yupo.com](http://www.yupo.com)

Sustainability resources

DEMI [www.demi.org.uk](http://www.demi.org.uk)

Green Seal [www.greenseal.org](http://www.greenseal.org)

GreenBlue [www.greenblue.org](http://www.greenblue.org)

Life Cycle Assessment information [www.life-cycle.org](http://www.life-cycle.org)

SustainAbility [www.sustainability.com](http://www.sustainability.com)

Sustainable Business [www.sustainablebusiness.com](http://www.sustainablebusiness.com)

Sustainable Measures [www.sustainablemeasures.com](http://www.sustainablemeasures.com)

Sustainable Style Foundation [www.sustainablestyle.org](http://www.sustainablestyle.org)

The Centre for Sustainable Design [www.cfsd.org.uk/](http://www.cfsd.org.uk/)

The Natural Step [www.naturalstep.org](http://www.naturalstep.org)