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Curriculum for a course in introductory digital darkroom

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CURRICULUM FOR A COURSE IN

INTRODUCTORY DIGITAL DARKROOM

———————————

A Project

Presented to the

Faculty of

California State University,

San Bernardino

———————————

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

in

Education: Vocational Education

———————————

by

Richard Paul Finner

December 1996

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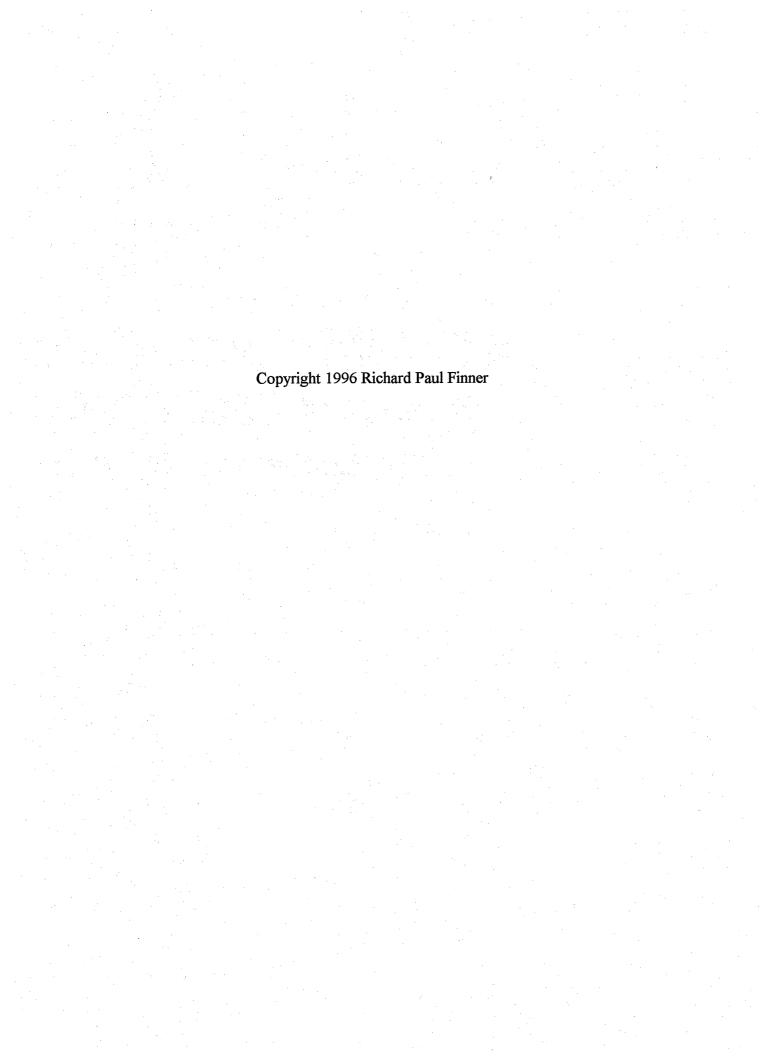San Bernardino

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by

Richard Paul Finner

December 1996

Approved by:

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ABSTRACT

This project addressed the need to change the emphasis of current darkroom / stripping curriculum in the Graphics Technology Department at Riverside Community College from a traditional, manual operation to digital technology. The literature review outlines current digital trends in the printing industry where digital training is required. Managers of printing plants deal with the issue of changing technology in light of possible employee layoffs. Implementing Introductory Digital Darkroom curriculum bridges the gap between old and new technologies. Making the change to digital curriculum ensures training facilities for hundreds of workers in the area in the printing industry as well as providing a sound foundation for students entering the field. Detailed lesson plans, a course outline and syllabus are provided.

ACKNOWLEDGMENTS

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION

The objective of this project was to develop a curriculum for a course in Introductory Digital Darkroom. This curriculum will be used to replace existing curriculum in the Camera, Stripping and Platemaking course taught in the Graphics Technology Department at Riverside Community College (RCC), Riverside, California. In order to provide students with technologically advanced, marketable skills, the course must be revised to include computerized electronic prepress techniques.

The Problem

With the advent of computers in graphic arts prepress, an entire occupation is in the process of being eliminated. In the graphics arts field, those individuals who shoot negatives and manually assemble them on flats in preparation for platemaking are called strippers. Strippers are talented craftspersons who spend years perfecting their skills. Now that images can be processed on the computer and can be output directly to film, plate, or press, the need for strippers is dropping rapidly (Jeffrey, 1996).

The greatest strength possessed by prepress workers is their ability to cope with change (Haimes, 1995). Experience has indicated that it is much easier to teach a stripper the art of computer imaging, than it is to teach a computer whiz the art of stripping. Therefore, this course outlines the curriculum required to teach strippers that which they do not know and sometimes fear--computer imaging. Traditional stripping instructors teach process camera work and image assembly on the light table. Camera work and image assembly are manual operations which are being replaced by functions performed by the computer. Haimes (1995), indicated that current prepress processes will disappear by the year 2000. The proposed Introductory Digital Darkroom course merges the technologies of both manual stripping and computer stripping.

1

Printing operation managers are in the process of changing prepress technology from manual to digital. Employees are a valuable asset which can be retrained to meet future needs of each company. Most printing operations are small plants with fewer than 20 employees (Ruggles, 1991). As technology becomes available at a lower cost, manual process cameras and stripping equipment will be replaced with computers connected to imagesetters which produce film directly from the computer. Printing company managers may decide to replace old technology with computer-to-plate equipment. Maybe a printing press which is self-imaging directly from computer is in the future for these printing plants. All of these technologies exist today to provide the latest in digital output, and require trained personnel. Printing is adapting to provide lower cost, better quality and to maintain its place in the world of communication (Romano, 1995). Introductory Digital Darkroom is an entry level course to introduce the technology and as a replacement for the basic stripping course. This new course will provide a link between old and new technologies.

Each of these emerging technologies has a common thread--the computer. Projections indicate that digital printing will replace conventional lithography as the dominant industry process by the year 2010 (Lamparter, 1994). Changing technology will require a computer-literate workforce. This computer conversion will take place in stages. Most printing firms will convert to some form of digital output as early as the year 2000. Managers at R. R. Donnelley, Chicago, the nation's largest printer, report that the company will be 100% digital by 1998 (Welcome to the age of computer-to-plate, 1995).

The Introductory Digital Darkroom course will attract beginning graphic arts students as well as prepress employees from a myriad of printers in the marketplace. Printing salespeople understand little about the technology of today and as a result, require training. Roth (1995) indicated that finding qualified employees ranks fifth in a survey of concerns among printers. Promoting the class among printing businesses will increase

enrollment for the Graphics Technology Department at RCC. By reaching out to the business world, RCC may find enormous support, as courses are offered in areas where a genuine need has been identified.

Statement of the Problem

The problem is that the present course for basic stripping at RCC is teaching an old curriculum to a dwindling number of students. Students fail to see the relevance of the course in light of changing technology.

Purpose of the Project

The purpose of this project, is to design a one-semester course that bridges basic, traditional camera/stripping with digitally-produced imaging on a computer. The proposed course is designed to replace the existing basic stripping class. The curriculum consists of a course outline, syllabus, and lesson plans.

Assumptions

Due to the technological nature of Introductory Digital Darkroom, students must have a basis from which to build. Introductory Digital Darkroom is not designed to be an entry level computer class. The course is designed to build upon skills already mastered. Therefore, it is assumed that students will pass Graphics Technology 75, Desktop Publishing and Graphics Technology 1, Introduction to Graphics Technology, both with a "C" or better.

Delimitations

The Introductory Digital Darkroom is designed for instruction on both conventional process cameras and light tables, as well as Macintosh computers. Class

projects will first demonstrate camera and manual stripping techniques. Then, the same operations will be performed on the computer. The software applications to be used will include Adobe PageMaker, QuarkEXpress, Adobe Illustrator, Adobe PhotoShop, Adobe TrapWise, and Adobe PressWise.

Limitations

Limitations placed on this curriculum will be due to the number of computers available and the number of licensed copies of the software on hand. One licensed copy of Adobe PressWise sells for $1,000.00 with education discounts. Costs for software maintenance and upgrade are extremely high. Each computer terminal must have at least 32 megabytes of Random Access Memory (RAM) to handle image manipulation. Hardware and software access due to cost are major limiting factors. Budgetary factors are discussed at the end of the project.

Significance of the Project

The significance of this course in Introductory Digital Darkroom is best illustrated in a letter to the editor of American Printer Magazine (Roth, 1996a). Brent G. Webster, a displaced stripper, asked for direction, because stripping is a dying trade. Many strippers in the Riverside area find themselves in the same dilemma. Displaced, skilled workers question their worth to a business in decline. These workers question their future earning power to support their families. The editor indicates that the concern is a legitimate one and that strippers obtain computer training as soon as possible.

Introductory Digital Darkroom provides the initial step for thousands of workers who find themselves in the same position as Mr. Webster. Traditional stripping courses do not meet the needs of existing technology when that technology has advanced so far in a few short years. Students must receive marketable skills, to give them a boost instead of a

pink slip. The entire issue of obsolete strippers is being ignored in print. Few trade journals address the plight of the stripper in the Graphic Arts industry. This curriculum is extremely significant, to provide hope and a future for these skilled workers.

Definition of Terms

The following terms are defined as to how they apply to this project and are provided for clarification (Bruno, 1995; Romano, 1996).

Analog color proofs	Off-press color proofs made from separation films.
CD-ROM	Acronym for Compact Disk Read-Only-Memory. The computer uses the CD-ROM as a data storage medium.
CMYK	Four process colors when combined produce full-color images on paper--cyan, magenta, yellow and black.
Color separation	The process used to produce the four process color images (cyan, magenta, yellow and black) needed to reproduce full-color images on press.
Computer- to-plate	The technology which produces images from a computer directly onto printing plates, without the need for film or a stripper. The plates are then mounted on a press for printing.
Desktop Publishing	The creation of documents, merging text and graphics.
Digital	The generic term for images manipulated by a computer.
Digital color proof	An off-press color proof produced from data without the need for separation films.
Digital plates	Printing plates imaged by digital data from a computer prepress system.
Digital printing	Printing by plateless imaging systems that are imaged by digital data created by computer.

Direct imaging	The technology which produces images from a computer directly onto the printing press imaging cylinders, without the need for film, strippers or even a platesetter.
Halftone	The reproduction of continuous-tone images (photos), through a screening process, which converts the image into dots of various sizes and equal spacing between centers.
Hardware	The physical components of a computer. (i.e. keyboard, monitor, disk drive).
Hi-Fi color	Reproducing full-color images using up to seven colors (cyan, magenta, yellow, black plus others). Provides better reproduction quality than cyan, magenta, yellow, and black.
Imagesetter	An output device, which produces pages of images on paper or film.
Imposition	The arranging of pages in a press form to ensure the correct order after the printed sheet is folded and trimmed.
On demand printing	The technology which produces images for relatively short run lengths on presses imaged directly from a computer.
Line copy	Any copy suitable for reproduction without using a halftone screen.
Modem	(MOdulator/DEModulator) A device that converts computer data into signals or vice versa, for transmission over phone lines.
Negative	Film containing an image in which the values of the original are reversed so that the dark areas appear light and vice versa.
OCR	Optical Character Reader. A device that allows a computer to read printed or written information, which can then be manipulated in a word processing application.
Postscript	A computer description language which allows a programmer to create complex pages using a series of commands. Text and graphics can be controlled with mathematical precision.

Prepress	The collective term for all processes involved in preparing images before printing on the press.
Process camera	The camera used to produce film for the stripping process.
RIP	Raster Image Processor. A device or program which translates page information into the actual pattern of dots which is imaged onto paper, film or plates in imagesetters and platesetters.
Scanner	Any graphic input device that converts printed images into digital data. A scanner also is used to "read" OCR information.
Software	The term for computer applications or programs which drive computers.
Stochastic screening	As opposed to halftoning, a digital screening process that converts images into very small dots of equal size and variable spacing. Also called Frequency Modulated (FM) screening. The process must be produced digitally by computer.
Stripping	The assembly of film images onto flats, for the purpose of producing printing plates for the press.
Trapping	The overlapping of colors to eliminate unwanted white areas produced by misregistration at the press.

Summary

The introductory section identified the need to change existing emphasis to the Introductory Digital Darkroom. Addressing the need for computer training in the stripping field is essential for new students, strippers in the field, and owners of businesses wishing to expand their technology. Additionally, advertising the course to businesses on the verge of technology changes will increase enrollment at the community college.

Organization of the Project

The project includes a review of the literature on digital technology, the methodology which was used to complete the project, a budget, recommendations for future courses, the course syllabus, a detailed course outline, and a comprehensive list of references. Supplementary material is provided for course development, including comprehensive lesson plans.

CHAPTER II

THE LITERATURE REVIEW

Introduction

The graphic arts industry may be facing its twilight years, in its present form. The

digital revolution represents the dawn of a new graphics industry. Instead of remembering

how things were, concentration must be given on how things are going to be (Roth,

1996b). This review contains the background for the changing technology of digital

prepress as revealed through a review of trade journals and texts. Each major technology

change is described and the foundation for the Introductory Digital Darkroom curriculum

is discussed.

Literature Overview

During the Super Bowl game of 1985, Apple Computer executives purchased two

minutes of valuable air time to introduce the latest in personal computer technology. With

Super Bowl hype, desktop publishing was born. Apple introduced the Macintosh, a laser

printer and Aldus PageMaker (Romano, 1996). From that moment in time, advances in

printing technology progressed faster than at any other time in modern history. As

coincidence would have it, the development of the printing press in the mid-1400s

represents the beginning of modern history, ushering in the first technological revolution.

DRUPA, the largest of all graphic arts exhibitions, is held every five years in

Dusseldorf, Germany. Vinocur (1995), after attending the 1995 exhibition, recalled

thinking how graphics systems in 1990 seemed so antiquated. In 1990, the uncertainty

over PC- and MAC-based systems with their ease of use and limited color capabilities was

prevalent. Today, high-end, expensive, electronic prepress systems have lost market share

to the now more powerful, desktop equipment which provides greater productivity with

less capital investment.

For over a hundred years, photo-offset lithography has been closely linked to film and the images it provides on plates. A description of this process is warranted. Images to be printed are shot with a process camera, producing line and halftone film which are assembled in printing position on stripping flats. Once ready, these flats are exposed with a light source, onto metal printing plates. The plates are processed and provide the surface which is mounted on the printing press, to duplicate the images on paper. Many printers continue to use these processes to provide quality printing for clients. The use of manual stripping techniques may still be applied for a few more years until costs of new technology come down in price, and until they can be justified (Jeffrey, 1995).

Demand for Digital Change

The proliferation of desktop publishing platforms in business has created a demand for short run, full-color printing. Managers are increasing their full-color printing projects, because they can process the input themselves. As demand for color increases, the demand for two or three-color work decreases. Roth (1995), projected black and white printing increasing slightly, and full-color increasing drastically. Surprisingly, reduced printing budgets are to blame for the increase in color printing. Department managers can produce their own projects in color, albeit less quality color, on tighter budgets, and print the projects on color printers within the department.

The Technology Survey

A 1995 survey of printers in the U.S. and Canada, ranked new digital technologies in order of their importance (GATF Tech alert 1996 survey, 1995). The future of printing technology is outlined in the results. Ranked first in importance was computer-to-plate (70%), the ability to send computer images directly to a platesetter. Next, was on-demand

10

printing (66%), devices which output like a printing press directly from the computer. Then, digital printing (33%), imaging from the computer directly to a printing press. Online services followed (26%), as demand for publishing on the World Wide Web increases. Other areas of technological growth include electronic imposition (13%), color management (11%), stochastic screening (5%), and hi-fi color (3%).

Interpreting the GATF survey prioritizes emerging technologies and provides insight as to the part computers have played in this change. Of the 13 technologies listed in the survey, 10 are computer-controlled. Another interesting comparison is that most of these technologies require digital input, which is the subject of the proposed curriculum. This survey served as the guide for this literature review. Only those topics linked closest with the Introductory Digital Darkroom course are discussed.

Computer-to-Plate

Ranking number one in the survey, was computer-to-plate (CTP). This technology involves composing the documents on a computer, proofing, then downloading to a platesetter which produces printing plates to be mounted on the press.

The advantages of this system are overwhelming. For small print shop owners unable to purchase new digital presses, computer-to-plate represents a way to use existing presses and still realize labor savings in prepress. Material savings are realized by eliminating flats, film, and other supplies. Hazardous plate developers and film fixers are eliminated. Improved print quality results by eliminating multiple imaging stages (Quick printing moves to the cutting edge, 1995).

Disadvantages of CTP are many. Reliable digital proofing methods are expensive and few. Extensive training is required to operate CTP. The capital expenditure for CTP equipment is extremely high. Printing managers will have to maintain a 100% digital workflow, despite customers lack of technology training (Stanton, 1995).

11

The tallest hurdle for CTP is the issue of digital proofing (Stanton, 1995). Traditional stripping procedures produce negatives which can be contacted to produce quality proofs. CTP does not involve film, requiring the proofing method to also be digital. Low-end digital proofing equipment is being developed at 3M and Kodak but is still in the developmental stage, lacking true, reliable color capabilities. For high-end digital color proofing equipment, managers will typically spend from $25,000.00 to $200,000.00 (Jeffrey, 1995).

Where now there are approximately 300 CTP units in operation, it is projected that by 1997 the number will triple (Sharples, 1994). The technology will have to be developed side by side with current analog systems, until input is consistently digital from all sources (Thompson, 1995).

On-Demand Printing

On-demand printing (ODP) is described as the printing of information directly to an output device without intermediate steps (Stoy, 1995a). This definition implies that the first laser printers classify as on-demand printers. Today's choices of imaging (output) devices provide a much broader spectrum of quality and speed.

The greatest advantage for ODP is the speed at which materials are produced for the customer. At the touch of a button, documents are printed from a digital format. The customer receives the order with less waste and hassle. Another advantage is inventory savings. Instead of investing capital in documents which gather dust in a warehouse, specific needs are met, as fewer documents are printed. Each document can be individualized to a specific individual or need. Copy run lengths can run from 1 to 5,000 unique documents (Shuster, 1996).

Disadvantages do exist with ODP. The quality is generally lower than traditional printing, and the cost of the equipment is high ($50,000 to $500,000). Operators are

required to be skilled on computers. The speed of the process is slower than traditional printing processes.

Meeting the needs of business by providing a low-cost, acceptable quality alternative is the goal of on-demand printing. ODP fills the gap which prior to its conception was filled with black and white or mechanical color options. The Agfa Chromapress, the Indigo E-Print 1000, the Nipson Varypress, Riso digital duplicators, and Xerox DocuTech are examples of on-demand presses (Stoy, 1995a). Consultants warn that ignoring digital on-demand printing may jeopardize the future of some shops (Duchesne, 1995; Neubauer, 1995).

Digital Printing

The offset printing press is entering the modern, fast-paced life. The press is going digital (Shuster, 1996). The category of digital printing (DP) involves not only short-run on-demand printing but also traditional presses imaged with digital technology. Digital printing describes traditional presses which image themselves directly from a prepress computer terminal. Eighty percent of digital printing is still what happens up front on the computer (Haimes, 1995).

Digital printing is no longer just another printing option (Benson, 1995). Examples of this class of digital printers are the Heidelberg GTO-DI and the Heidelberg Quickmaster-DI. The return on investment is about eighteen months (Shields, 1995). The quality of digital printers will exceed traditional processes as imaging improves (Shuster, 1995).

The greatest advantage for DP is the savings accrued by the elimination of prepress consumables such as film, flats, tape and tools. As the press images itself, registration is tighter and projects come up to color faster. The major drawback is the capital expenditure. The Heidelberg GTO-DI costs approximately $600,000. A small

printer who owns a standard GTO would be better off purchasing computer-to-plate than to spend so much capital on a new press. Press operators must have good command of computers and be skilled in computer prepress.

Another attractive option with digital printing, is the distribute then print model (Shields, 1995). Traditional print-and-distribute processes require copies to be printed including overruns for loss. Distribute-then-print allows exact quantities to be printed and delivered closer to the distribution point. An example would be to digitally transmit printing needs to a Chicago printing plant. After arrival, the printed documents are delivered to the hotel, eliminating the need to pack them on the plane. Consultants call this online service the FTD of the printing industry (McGrath, 1995). An additional by-product is the ability to individualize the mailing elements to each customer. Mailing lists can be tailored first, merge the list with the digitally-printed document and print the exact amount needed.

Transmission of Customer Files

With a modem and a computer, documents can be transmitted to the printer and be printed before arrival at the shop (Shuster, 1996). On-line services are growing at a fantastic rate. The possibilities of World Wide Web publishing are enormous. Large printing firms are represented through home pages on the World Wide Web. By linking with them over the web, writers can automatically upload novels, and businesses can transmit price-sensitive data. On-line publishing goes head-to-head with overnight delivery services by eliminating the need for long-distance transportation (McGrath, 1995).

On-line service is available through many quick print shops. Owners of quick print shops will struggle to maintain business, in the face of new technology, and will have to offer a variety of services to survive (Ruggles, 1991).

Electronic Imposition

Electronic imposition is the segment of the digital prepress operation which combines previously-created pages into press sheet segments, to be bound in the proper order when assembled and cut. Electronic imposition is a necessary step in the prepress process. The software is expensive and the demands on hardware are great. This stage must be completed prior to downloading to the imagesetter, digital proofer or digital press.

Color Management

Digital input presents some particular problems for color management. As mentioned earlier, without film, conventional chromalin and color key proofs cannot be produced, requiring digital proofs which may not be true color. The problem is that images scanned do not represent actual printed color on the monitor and images output to press do not resemble the original scan. Each phase of digital manipulation has its own footprint and tweaks color in its own way. The solution is available through software packages which calibrate each phase of production. One such package is Color Sync 2.0 which allows the printer to match color reproduction on the scanner, the monitor, the proof, and the press. This solution provides true what-you-see-is-what-you-get, requiring computer-sensitive training.

Stochastic Screening

Since 1992, stochastic screening or frequency modulated (FM) screening has been an issue in graphic arts circles (Stone, 1995). The development of FM screening began as long as 30 years ago in Germany (LiPetri, 1995). In contrast to halftoning, FM screening is a digital process which converts images into very small dots of equal size and variable spacing. The FM process more closely resembles continuous-tone originals than

conventional halftoning techniques (Stone, 1995). The FM process must be produced digitally by computer.

FM screening resembles continuous tone and results in sharper resolution and improved quality over conventional halftoning. Moire' distortion is eliminated. Registration is less critical and is more forgiving on press. FM screened film cannot be duped or dot structure will be distorted. Proofing is difficult, and dot etching cannot be used to color correct film (Stone, 1995). Examples of the best use of FM screening are fine art reproductions, portraits, five to seven-color printing and security documents. Current software include: Isis' ICEfields and UGRS's Velvet Screening.

Technically speaking, FM screening is a mathematical algorithm, which randomly places the dot structure of the photo, and can only be produced through the use of a computer. Opinions are divided as to the cost of such systems, because at face value, initial setup requires only hardware and software. Other problems surface which make costs higher than expected. For example, contacting techniques may require more efficient equipment. Proofing requires digital output, because output is generally directed to press rather than to film.

Hi-Fi Color

Hi-Fi color is a step above traditional CMYK four-color separations and do not involve a revolution in equipment or supplies. Instead of separating photographs into four colors, Hi-Fi color is a software-based process which reproduces photographs in up to seven colors. Since the printing market is increasingly dominated by six- and seven-color presses, this process makes optimum use of every press unit. The results are brighter, sharper, and more striking, achieving a wider range of colors and enhancing overall print quality (McKeon, 1994-95).

Summary

All of the processes reviewed, have a common thread. Each process is inseparably linked to the computer. The proposed curriculum introduces students to these technologies and begins students' training for digital prepress. The future of mere imagesetting, digital output to film or paper, is projected to last until the end of the decade (Stoy, 1995b). Other technologies, such as digital photography, are emerging which will depend upon a trained workforce to manipulate and output images. Based upon the literature review, time is short when reacting to technology changes. Employing Introductory Digital Darkroom curriculum is essential to prepare students for the workforce of tomorrow.

CHAPTER III

METHODOLOGY

Introduction

This chapter contains a description of the population to be served by this curriculum. Prerequisites are outlined and textbook information is provided. Results of the literature review are evaluated and future needs of printing managers are projected in relationship to future courses at Riverside Community College.

Methodology Overview

The population to be served by this curriculum is students enrolled in Graphics Technology at RCC. As part of the certificate and degree programs, students are required to successfully pass Graphics Technology 80, Camera, Stripping and Platemaking. Introductory Digital Darkroom curriculum replaces existing course material. The prerequisite for the Introductory Digital Darkroom course is successful completion of Graphics Technology 75, Introductory Desktop Publishing, and Graphics Technology 1, Introduction to Graphics Technology.

The content of this course of study has been extracted from the existing Camera, Stripping and Platemaking course at RCC; trade journals; the Pocket Guide to Digital Prepress (1996), by Frank J. Romano; and Prepress, Electronic Prepress: A Hands-on Introduction (1995), by Bill Parsons. These texts were chosen because they represent current trends in the printing industry as described by leaders in the industry. Introductory Digital Darkroom is designed for the beginning student.

This curriculum introduces students to both traditional and digital prepress technologies. The curriculum contrasts manual camera/stripping techniques with computer-aided image generation. By demonstrating the same skills on old and new systems, students gain greater understanding and will be prepared for both technologies,

18

which continue to exist side-by-side in most printing operations. Further curriculum development will address advanced electronic prepress operations, which will provide training for transitioning camera operators and image assemblers.

Preliminary study of electronic prepress through the literature review indicated an overwhelming need for students entering the graphic arts field to be computer literate. Computer skills will be the basis for all facets of printing within the next few years. Peterson (1996) indicated that 70% of all printing managers cannot afford to provide training in-house. These printing managers rely on community college instructors, night school instructors, trade association members, and video tapes to train employees. The only qualifier identified in trade journals is the need for the institution to be up-to-date in terms of equipment and instruction.

Traditional prepress courses are prevalent among secondary and postsecondary schools at the present time. There are very few training sources prepared to deal with emerging digital graphic arts technologies. If community college instructors are required by business to provide training, then it falls upon community college instructors to obtain the technology, and teach it.

Interviews were conducted with business representatives and full and part-time faculty members to determine whether old and new technologies should be taught simultaneously. Questions were also raised regarding the direction of future courses. Each response supported the dual role of the introductory course and each response indicated the need to reconsider the entire structure of graphics courses at Riverside Community College.

Art and photography courses are going digital as well. Graphics Technology instructors will be required to train these related students in image manipulation. Cross-referencing courses between departments will result in greater student enrollment and cement graphics as a viable computer technology area.

Once the curriculum has been revised, local printing businesses will be contacted to invite employees for retraining at Riverside Community College. The community, business, and possible displaced workers will all benefit from courses updated to meet existing needs of the Graphic Arts industry.

Summary

This curriculum, as outlined, contains up-to-date training using industry leader input. Students meeting prerequisites will be exposed to basic manual procedures as well as digital techniques. The course meets the needs of workers in the Riverside area and will ensure the growth of the Graphics Technology department at Riverside Community College.

CHAPTER IV

BUDGET FOR CURRICULUM IMPLEMENTATION

Introduction

Budget considerations are crucial to the implementation of this curriculum. This chapter evaluates hardware and software currently available at RCC. Hardware and software needs are determined.

Budget Evaluation

The costs associated with course instruction are limited to additional computer hardware and software to accommodate up to 30 students. Existing computer lab resources are listed below. Additional hardware and software needs are also listed.

Hardware and Software Requirements

Based upon the recommendation of Frank Felker in Quick Printing Magazine (1996), the essential gear for prepress success consists of a PowerMac 8500 with 32 megabytes of RAM, a 2 gigabyte hard drive, video RAM, a quad-speed CD-ROM drive and at least a 17" 24-bit color monitor. Additional equipment considerations include a scanner for digital imaging and optical character recognition (OCR), and a modem for electronic file transmission.

Software requirements include page layout software represented by Microsoft Word, Adobe PageMaker, and QuarkEXpress. Both QuarkEXpress and PageMaker are presented because of widespread use. Adobe Illustrator and Adobe PhotoShop are included for illustration and image manipulation. Adobe TrapWise and Adobe PressWise are included for trapping and signature layout.

This curriculum replaces existing curriculum for the Camera, Stripping and Platemaking course presently in place at Riverside Community College. The move to Introductory Digital Darkroom requires no additional supplies than the existing course.

The move also takes advantage of existing instructional staff.

Existing Computer Lab Resources

I.   Hardware

        A.   12-Performa 6214 Power Macs, 24 Mb RAM, 1 gigabyte harddrives

        B.   9-Quadra 650 Macs, 24 Mb RAM, 250Mb harddrives

        C.   21-Iomega ZIP drives

        D.   1-color scanner

II.   Software

        A.   Microsoft Word 6.0, lab pack

        B.   Adobe PageMaker 6.0, lab pack

        C.   QuarkEXpress 3.3, lab pack

        D.   Adobe Illustrator 6.0, lab pack

        E.   Adobe PhotoShop 3.0, lab pack

        F.   Adobe PressWise, one copy.

        G.   Adobe PressWise, one copy with multiple demo disks.

Projected Computer Lab Resource Needs

I.   Hardware

        A.   9-Power Mac 8500s, 32 Mb RAM, 1 gigabyte harddrives $22,500.00

        B.   21-8 Mb RAM upgrades $2,100.00

        C.   9-Iomega ZIP drives $1,800.00

        D.   9-CD-ROM upgrades for the existing Quadras $1,350.00

        D.   1 additional color scanner $3,000.00

        E.   1 color printer $5,000.00

        F.   Hardware total cost   **$35,750.00**

II. Software

    A.   Microsoft Word 6.0, 10 lab pack $500.00

    B.   Adobe PageMaker 6.0, 10 lab pack $1,000.00

    C.   QuarkEXpress 3.3, 10 lab pack $1,300.00

    D.   Adobe Illustrator 6.0, 10 lab pack $1,000.00

    E.   Adobe PhotoShop 3.0, 10 lab pack   <u>$1,300.00</u>

    F.   Software total cost   **$5,100.00**

III.   Total hardware and software cost   **$40,850.00**

Summary

    The commitment to adopt this curriculum requires budgetary resources which are available with administration assistance. Administration involvement in needs assessment is crucial. Budgetary assistance is also available through business sources which gain the most through employee training using this curriculum. Proper funding for computer lab enhancement benefits future employees in the graphic arts field, art students, photography students, and existing graphic arts employees in the Riverside area.

CHAPTER V

RECOMMENDATIONS

Introduction

This chapter outlines the future course of Prepress instruction at Riverside Community College. Introductory Digital Darkroom is the first step in updating graphics courses to current technology.

Overview

The Graphics Technology Department at Riverside Community College has been in existence for 75 years, providing quality instruction in the area of graphic arts. The course offerings have changed through the years to meet the challenges of new technology. The following recommendations are made for future digital updates to the RCC curriculum:

1. Annual evaluations of Introductory Digital Darkroom curriculum, by faculty and Advisory Committee members will provide adjustments required by industry needs and technology changes.

2. The next step in the digital changeover of RCC curriculum, will be to offer advanced courses in digital prepress. Courses will offer advanced digital instruction, rather than include manual techniques, and include advanced trapping and electronic imposition techniques.

3. A new certificate in Digital Prepress will be offered. Requirements for the certificate will include advanced desktop publishing, advanced image manipulation, computer art, and advanced digital darkroom.

Summary

Introductory Digital Darkroom is provided as an initial step in adjusting college curriculum to the digital printing world. Based upon the literature review, changes will be swift in the industry, presenting a special opportunity for the community college to adjust its curriculum and maintain its reputation of service to the community and to provide instruction to existing workers as well as new students.

APPENDIXES: Introductory Digital Darkroom

APPENDIX A

Syllabus

Introductory Digital Darkroom

Riverside Community College
Course Outline
Graphics Technology 80

Course Description

80   Introductory Digital Darkroom   4 units

   Prerequisites: Graphics Technology 1, Introductory Graphic Communications

                  Graphics Technology 75, Introductory Desktop Publishing

   Instruction in manual camera, darkroom techniques and procedures, stripping and

   platemaking. Additional instruction is provided in digital prepress, scanning and

   digital output. Total hours: 34 hours lecture and 106 hours laboratory.

Short Description for Class Schedule

   Introduction in manual and digital prepress techniques.

Course Objectives

   1.   To develop abilities of the learner to acquire technical knowledge for

         successful employment in the printing industry.

   2.   To produce high quality line and halftone images through the use of the

         process camera and flatbed scanner.

   3.   To assemble one to four-color images both manually and digitally in

         preparation for platemaking.

   4.   To orient the student with economic, civic, and moral responsibilities and

         ethics of good citizenship through an understanding of the role that printing

         has played in our society.

   5.   To acquaint the student with good housekeeping and safety practices.

Course Content

Lectures and/or laboratories follow the approximate schedule below:

Course Topics	Class Hours
Introduction to photo-offset printing. Safety practices	4
Operation of the process camera	30
Offset stripping	40
Halftone photography	8
Offset platemaking	8
Computer image assembly	52
Total Hours	**140**

In addition to the indicated hours, students are assigned the following reading, writing, and other outside assignments equivalent to two hours per one hour lecture, prorated for short term, lab and activity courses. Students will be responsible for reading the assigned text(s) and handouts as well as preparation for examinations and class discussions. Written responses are expected.

Methods of Instruction

- Lectures and demonstrations by instructor or guest speaker

- Multi-media presentations

- Hands-on manual and digital projects

- Homework

Methods of Evaluation

Grades are based upon:

- Demonstrated proficiency in subject matter, through in-class projects

- Frequent quizzes and exams

- Assigned written work

Course Materials

All materials, including textbooks, projects, tests, course outline, and handouts used in this course will be periodically reviewed by faculty and the Advisory Committee to ensure college-level instruction and relevance to industry needs.

APPENDIX B

Detailed Course Outline

Introductory Digital Darkroom

Course Content	Hours
I. Introduction and safety	4

    A. Course goals, schedule, and objectives

    B. Safety lecture, shop tour, and safety test

    C. Introduction to Photo-offset printing

II. Darkroom procedures	4

    A. Introduction to the Graphic Arts darkroom

    B. Process camera operation

        1. Shoot line negative

        2. Shoot PMT print

III. Computer procedures	4

    A. Introduction to computer prepress

    B. Desktop scanner operation

        1. Scan line art, produce a line art laser print

        2. Scan halftone, produce a halftone laser print

IV. Halftoning procedures	4

    A. Demonstrate halftone production on the process camera

        1. Shoot halftone

    B. Demonstrate contacting procedures

        1. Produce contact prints of halftone negatives

V. Color theory	4

    A. Color theory

    B. Computer color application

        1. Produce digital color images

    C. Manual color proofing: Chromacheck

        1. Produce chromacheck proof

VI.   Halftone modifications: Special effects   4

        A.   Contact screen variations

                1.   Concentric

                2.   Mezzotint

                3.   Straight line

        B.   Duotones

        C.   Produce projects

                1.   Special effect halftone negative and contact print

                2.   Duotone negatives and chromacheck proofs

VII.   Digital output to film or paper   4

        A.   Introduction to the imagesetter

                1.   Output digital images to film and paper

VIII.   Introduction to manual stripping and imposition   4

        A.   Manual stripping procedures

                1.   Tools

                2.   Materials

                3.   Terminology

                        a.   Gripper edge

                        b.   Lead edge

                        c.   Plate bend

                        d.   Procedures

                4.   Layout

        B.   Imposition

                1.   Terminology

                        a.   Sheetwise

                        b.   Work and tumble

        c.   Work and turn

        d.   Bleed

        e.   Creep

        f.   Crop marks and registration

        f.   Signature

        g.   Dummy

IX.   Job planning and image register systems   4

    A.   Job planning

        1.   Job ticket details

        2.   Planning the layout

        3.   Planning the flat

    B.   Image register systems

        1.   Image control

        2.   Sample image register systems

            a.   Tab and button method

            b.   Punched hole method

    C.   Manually strip a single color line negative with crop marks

X.   Manually-stripped image imposition: Work and turn and Work and Tumble   4

    A.   Manually strip line negatives in work and turn format, with crop marks

    B.   Manually strip line negatives in work and tumble format, with crop marks

XI.   Computer-generated image imposition: Work and turn and Work and Tumble   4

    A.   Produce images in work and turn format, with crop marks; laser output

    B.   Produce images in work and tumble format, with crop marks; laser output

XII.   Manually-stripped image imposition: Sheetwise   4

    A.   Manually strip line negatives in sheetwise format, with crop marks

    B.   Manually strip line negatives in sheetwise format, with crop marks

XIII. Halftone drop-ins and film marking procedures   4

    A.   Computer-generated halftone drop-in

          1.   Produce a computer document merging a scanned halftone

          2.   Produce a laser print

    B.   Film marking procedures

          1.   Film trimming techniques

          2.   Film scribing

          3.   Opaquing

          4.   Complimentary flats

XIV. Manually-stripped halftone techniques   4

    A.   Demonstrate butted images and mortising

          1.   Produce manually-stripped complementary flats

          2.   Produce a blueline proof

XV. Knockouts, overprints, tints   4

    A.   Computer-generated knockouts, overprints and tints

          1.   Produce a computer-generated document incorporating knockouts, overprints, and tints

          2.   Produce a laser print

    B.   Demonstrate manually-stripped knockouts, overprints, and tints

XVI. Manually-stripped knockouts, overprints, and tints   4

    A.   Produce complimentary flats incorporating knockouts, overprints, and tints

    B.   Produce a blueline proof

XVII. Masking techniques   4

    A.   Demonstrate computer-generated masking techniques

          1.   Produce a document incorporating masking techniques

          2.   Produce a laser print

B.   Demonstrate manually-stripped masking techniques

C.   Demonstrate manual film compositing techniques

    1.   Produce a contact print proof

XVIII. Signatures   4

A.   Demonstrate signature construction

B.   Produce a multiple page signature dummy

C.   Manually strip multiple page signatures

XIX.   Spot color, spreads, and chokes   4

A.   Demonstrate the application of color to computer documents

    1.   Create a computer-generated two-color form

    2.   Produce laser print separations

B.   Demonstrate manually-produced spreads and choke

XX.   Stripping additional colors; manually-stripped knockouts and chokes   4

A.   Produce complimentary flats incorporating knockouts and chokes

B.   Demonstrate the chromacheck proofing process

    1.   Produce a chromacheck proof of the knockout and choke project

XXI.   Trapping colors: registration issues   4

A.   Demonstrate trapping techniques on the computer

    1.   Produce a two-color computer-generated document demonstrating proper trapping technique

    2.   Produce separated laser prints

B.   Demonstrate manually produced traps

    1.   Produce positives

    2.   Demonstrate the use of the micro-modifier

XXII.   Trapping colors: generating film   4

A.   Produce film necessary for a two-color project

B.   Practice use of the micro-modifier

XXIII. Trapping colors and screen tints   4

     A.   Demonstrate trapping issues requiring spreads, reverses, and knockouts

          1.   Produce a two-color computer-generated document demonstrating spread, reverse, and knockout techniques

          2.   Produce separated laser prints

     B.   Colors generated by screen tints

          1.   Screen angles

          2.   Moire problems

XXIV. Trapping colors: manual stripping techniques   4

     A.   Manually strip a two-color project on complimentary flats, demonstrating spreads, reverses, and knockouts

     B.   Produce chromacheck proofs of the project

XXV. Trapping: three colors   4

     A.   Produce a three-color computer-generated document, demonstrating spreads, reverses, and knockouts

XXVI. Trapping colors: manual stripping techniques   4

     A.   Manually strip a three-color project on complimentary flats, demonstrating spreads, reverses, and knockouts

     B.   Produce chromacheck proofs of the project

XXVII. Process colors: generating spot colors   4

     A.   Produce a four-color computer-generated document, demonstrating spot color techniques

     B.   Produce laser-separated prints

     C.   Demonstrate manually-generated spot four-color techniques

          1.   Ruby film

XXVIII. Cartoon four-color process: manual process 4

    A.   Manually strip and apply spot four-color to a cartoon strip

    B.   Produce chromacheck proofs of the project

XXVIV. Four-color process separations: computer process 4

    A.   Demonstrate four-color separations on the computer

        1.   Produce a four-color process document

        2.   Produce laser-separated prints

    B.   Demonstrate manually-stripped four-color process

XXX. Four-color process separations: manual process 4

    A.   Produce manually-stripped four-color process flats

    B.   Produce chromacheck proofs of the project

XXXI. Open lab for final projects 16

XXXII. Written final exam 2

APPENDIX C

Lesson Plans

Introductory Digital Darkroom

Type and Title of Lesson	Lesson Plan	Lesson # 1

Lecture - Introduction

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on course requirements, safety information and fundamentals of Photo-offset Printing,

Person: students

Performance: will pass a safety test

Criteria: with 100% accuracy.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)

Course Syllabus, Chemical Samples, VHS player, Safety Video, handouts, Safety Test, Dry Erase Board

Introduction (focus, motivation, anticipatory set)
After introducing the syllabus, ask the question: "What would you do if a family member swallowed poison?" Focus on safety in the workplace.

Content (key points)
Introduce the syllabus. Describe the oxymoron: "Digital Darkroom"
Pass out handouts: Safety Rules, MSDS Sheet Sample, Chemical Inventory
Instruct students in Safety from the handouts
Show Safety Video
Answer Questions
Administer Safety Test. (Described below)
Introduce the topic "Photo-offset Printing" from Prust, Chapters 1 & 20
    Discuss job flow and the part prepress imaging plays in the printing process
    Define image generation, planography and offset.
    Discuss "oil and water don't mix, " plating and printing processes.

Guided Practice (student activity and/or checking for understanding)
Orally check for understanding. Administer Safety Test. Correct immediately and help students obtain 100%. Assign homework: Prust, Chapter 20 Review Questions, Page 327. Remind students to answer in complete sentences. Read Prust, Chapter 13 for next class.
Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of success in this course. Excite students regarding the nature of this course. (ie: Computer and manual application of image assembly).

Type and Title of Lesson   Lesson Plan | Lesson #   2 |

Lecture / Demonstration - Darkroom procedures

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on darkroom procedures,

Person: students
Performance: will shoot a line negative and a PMT print

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)

Darkroom set up; Negative and PMT samples.

Introduction (focus, motivation, anticipatory set)
Review Photo-offset Printing. Students review Prust, Chapter 13.
Focus on safe and effective darkroom procedures.

Content (key points)
Introduce Prust, Chapter 13, Line Photography and Process Cameras
Discuss the difference between Vertical and Horizontal Process Cameras
Identify the main parts of the Process Camera and their purpose
      Frame, Copyboard, Lighting System, Lensboard, Film Back, Copyboard Control,
      Lensboard Control and Ground Glass
Discuss film types and their uses
Discuss the Diffusion Transfer or Photo Mechanical Transfer (PMT) process
Outline camera operating procedures
Outline common darkroom etiquette
Give students a tour of the darkroom and related equipment
Demonstrate the procedure for shooting a line negative and a PMT print

Guided Practice (student activity and/or checking for understanding)
Students will shoot a line negative and a PMT print and turn them in for credit.
Assign homework: Prust, Chapter 13 Review Questions, Pages 213-214. Remind students to
answer in complete sentences. Read Prust, Chapter 12 for next class.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of darkroom procedures.
Collect Chapter 20 answers.

Type and Title of Lesson	Lesson Plan	Lesson # 3

Lecture / Demonstration-Scanning line art and halftones

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on scanning images with a computer scanner,

Person: students
Performance: will scan line art and halftones

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Computer lab set up; Originals ready for scanning.

Introduction (focus, motivation, anticipatory set)
Review basic darkroom procedures and the parts of the Process Camera.
Ask the question: "Can continuous tone photographs be reproduced on an offset press?"
Focus on computers and image scanning.
Content (key points)
Discuss Prust, Chapter 12, Desktop Publishing:
    Define the following terms:
        Desktop Publishing
        Hardware and Software
        System Software
        Input and Output Devices
        WYSIWYG
        Continuous Tone
        Halftone
Demonstrate the ability the computer has to manipulate images
Demonstrate scanning techniques

Guided Practice (student activity and/or checking for understanding)
Students will scan line art and a halftone and turn them in for credit. Assign
homework: Prust, Chapter 12 Review Questions, Page 188. Remind students to
answer in complete sentences. Read Prust, Chapter 14 for next class.

Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of computer scanning.
Collect Chapter 13 answers.

Type and Title of Lesson	Lesson Plan	Lesson # 4

Lecture / Demonstration-Shooting halftones on the process camera

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on shooting halftones on the Process Camera,

Person: students
Performance: will shoot halftones

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Darkroom set up; originals ready for shooting; proportion wheels.

Introduction (focus, motivation, anticipatory set)
Review scanning and computer terminology.
Review the question: "Can continuous tone photographs be reproduced on the Offset Press?"
Focus on Shooting quality halftones with the process camera.
Content (key points)
Discuss Prust, Chapter 14, Halftone Reproduction:
            Define the following terms:
                    Highlight, shadow and midtone dots. Dots per inch (DPI)
                    Reflection and transparent copy
                    Special screens
                    Density
                    Gray scale
                    Densitometer
                    Main, flash and bump exposures
Demonstrate how to use the proportion wheel
Demonstrate how to evaluate good and bad results
Demonstrate the process of shooting a halftone and making a contact print

Guided Practice (student activity and/or checking for understanding)
Students will shoot a halftone and a contact print and turn them in for credit. Assign
homework: Prust, Chapter 14 Review Questions, Page 233. Remind students to answer
in complete sentences.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of halftones.
Collect Chapter 12 answers.

Type and Title of Lesson	# Lesson Plan	Lesson # 5

Lecture / Demonstration - Applying color to computer documents

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on applying color to computer documents,

Person: students
Performance: will produce laser print separations

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Computer lab set up; sample files on diskette; samples of separated output.

Introduction (focus, motivation, anticipatory set)
Review halftone production on the process camera and contacting.
Ask the question: "What four colors are necessary to reproduce full color on the offset press?"
Focus on color theory and color application.
Content (key points)
Discuss Prust, Chapter 15, Color Theory:
            Define the following terms:
                        Color wheel
                        Color separations
                        Screen angles
                        Electronic scanners
                        Color correction
                        Color proofing systems
Demonstrate the application of color to computer documents
Demonstrate color separations through laser printer output

Guided Practice (student activity and/or checking for understanding)
Students will create multiple color documents and separate the colors through laser printer output
and turn them in for credit. Assign homework: Prust, Chapter 15 Review Questions, Page 255.
Remind students to answer in complete sentences. Read Prust, Chapter 16 for next class.
Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of color theory.
Collect Chapter 14 answers.

| Type and Title of Lesson | Lesson Plan | Lesson # 6 |

Lecture / Demonstration - Shooting modifications and special effects on the Process Camera

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on shooting modifications and special effects on the
Process Camera,
Person: students
Performance: will shoot special effect halftones

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Darkroom set up; originals ready for shooting.

Introduction (focus, motivation, anticipatory set)
Review color theory and separation techniques. Ask the question: "What can be done to
halftones to imitate full-color, when the client can't afford full-color?"
Focus on shooting modifications and special effect halftones with the process camera.
Content (key points)
Discuss Prust, Chapter 16, Modifications:
Define the following terms:
Modifications
Posterization
Duotones
Special effect screens
Electronic modification
Demonstrate how to shoot modifications and special effect halftones on the process camera.

Guided Practice (student activity and/or checking for understanding)
Students will shoot a modification halftone and a special effect halftone and a proof of each
and turn them in for credit. Assign homework: Prust, Chapter 16 Review Questions, Page
267. Remind students to answer in complete sentences.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of modifications and special
effect halftones. Collect Chapter 15 answers.

Type and Title of Lesson   # Lesson Plan | Lesson #   7 |

| Lecture / Demonstration - Digital output to film and paper |

OBJECTIVE (What student should be able to do as the result of this lesson).

> **Condition:** Given instructions on outputting to film and paper on an imagesetter,
>
> **Person:** students
> **Performance:** will produce digital film or paper output
>
> **Criteria:** accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Computer lab set up; sample files on diskette; samples of film and paper (laser and imagesetter) output.

Introduction (focus, motivation, anticipatory set)
Review modifications and special effect halftones on the process camera and proofing.
Ask the question: "What is the magic word, representing change in the darkroom?"
Focus on digital output to film and paper.
Content (key points)
Discuss output possibilities from a computer: to laser printer, to imagesetter, to proofing device,
       to press direct
Discuss lines per inch (LPI) vs. dots per inch (DPI).
Discuss related issues to digital output:
       Stochastic screening
       Hi-Fi color
       Digital printing
       On-demand printing
       Distribute and print
       Electronic publishing on the World Wide Web
Demonstrate output on the imagesetter

Guided Practice (student activity and/or checking for understanding)
Students will create individual single-color documents and output them on the imagesetter and turn them in for credit. No homework. Study for the written test, which will be given at the beginning of the next class period.
Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of digital output.
Review prepress imaging for the written test. Collect Chapter 16 answers.

Type and Title of Lesson   # Lesson Plan   Lesson # **8**

Written test: Prepress imaging. Lecture / Demonstration-Stripping and image assembly

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given information on prepress imaging,
Person: students
Performance: will pass a test
Criteria: with at least 70% accuracy.
Condition: Given information on stripping and imposition,
Person: students
Performance: will respond to oral questioning
Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Test copies, sample negatives, proofs and prints for evaluation; sample stripping materials.

Written Test
Introduction (focus, motivation, anticipatory set)
Review digital output.
Ask the question: "What is a stripper?"
Focus on an introduction to stripping.
Content (key points)
Discuss Prust, Chapter 18, Stripping and Imposition:
Discuss stripping tools: light tables, punches, register pins, xacto knives, scribes, T-squares, brushes, opaque, loupes (magnifiers), paper and vinyl masking sheets, acetate of polyester sheets, tape, scissors, film cleaners, metal rulers.
Remind students to obtain their own xacto knives, scissors and rulers.
(Signatures will be discussed in lesson #18).
Define: Lead edge (gripper edge), plate bend, emulsion.
Demonstrate proper stripping methods and procedures which will apply to the class, for safety and production purposes.
Guided Practice (student activity and/or checking for understanding)
Assign homework: Prust, Chapter 18 Review Questions, Page 297.
Remind students to answer in complete sentences.
Read Peck, Chapters 4 and 6 for next class.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of stripping basics.

Type and Title of Lesson	# Lesson Plan	Lesson # 9

Lecture / Demonstration - Job planning and basic stripping layout

OBJECTIVE (What student should be able to do as the result of this lesson).

> **Condition:** Given instructions on basic stripping,
>
> **Person:** students
> **Performance:** will strip a line negative with crop marks
>
> **Criteria:** accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)

Stripping tables, negatives, flats and other supplies.

Introduction (focus, motivation, anticipatory set)
Review basic stripping techniques and terminology.
Focus on basic stripping procedures.

Content (key points)
Discuss Peck, Chapter 4, Job Planning and Chapter 6, Image Register Systems:
> Discuss the following topics:
>> Input from a job ticket, job specifications
>> Elimination of old work
>> Planning the layout and flats
>> Press considerations
>> Selecting the stripping method
>> Crop marks, registration marks, center marks
>> Register pins and punches

Demonstrate stripping a one-color line negative with crop marks and center marks.

Guided Practice (student activity and/or checking for understanding)
Students will strip a one-color line negative with crop marks and center marks and turn it in for credit. Assign homework: Read Peck, Chapter 5.

Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of basic stripping.

Type and Title of Lesson	Lesson Plan	Lesson # 10

Lecture / Demonstration - Imposition considerations

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on imposition techniques,

Person: students
Performance: will strip a line negative in work and turn, and work and tumble positions

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Stripping tables, negatives, flats and other supplies.

Introduction (focus, motivation, anticipatory set)
Review job planning techniques and terminology.
Focus on various imposition techniques.

Content (key points)
Discuss Peck, Chapter 5, Imposition Considerations:
(Signature / bindery considerations covered in lesson 18).
      Discuss the following topics:
            Two-sided printing options: Work and turn, work and tumble, and sheetwise.
            Web vs. Sheetfed considerations
      Define the following terms:
            Perfecting press
            Head and tail
            Sheet cutoff vs. sheet size
            Number "up"
      Demonstrate stripping work and turn, work and tumble flats with crop marks.

Guided Practice (student activity and/or checking for understanding)
Students will strip work and turn, and work and tumble flats with crop marks and center marks
and turn them in for credit.

Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of imposition methods.

Type and Title of Lesson | # Lesson Plan | Lesson # 11

Lecture / Demonstration - Computer imposition and blueline proofs

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on computer imposition,

Person: students
Performance: will produce work and turn, and work and tumble documents

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Computer lab set up; sample files on diskette; sample documents.

Introduction (focus, motivation, anticipatory set)
Review imposition techniques.
Focus on computer imposition and blueline proofing.

Content (key points)
Demonstrate computer documents created for work and turn and work and tumble.
Demonstrate blueline proofing procedures. Have students practice blueline proofing in preparation for next class.

Guided Practice (student activity and/or checking for understanding)
Students will create work and turn, and work and tumble documents on the computer and turn them in for credit. Students will practice blueline proofing procedures. No homework assignment.

Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of imposition.

50

Type and Title of Lesson	Lesson Plan	Lesson # 12

Demonstration - Imposition considerations

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on imposition techniques,

Person: students
Performance: will strip line negatives in sheetwise position, and blueline proof them,

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)

Stripping tables, negatives, flats and other supplies.

Introduction (focus, motivation, anticipatory set)
Review imposition techniques and terminology.
Focus on sheetwise imposition technique.

Content (key points)
Demonstrate stripping sheetwise with crop marks.
Blueline proof all work and turn, work and tumble, and sheetwise flats.

Guided Practice (student activity and/or checking for understanding)
Students will strip sheetwise flats with crop marks and center marks.
Students will also turn in blueline proofs for work and turn, and work and tumble, and
sheetwise flats. Read Peck, Chapters 7 and 8, Marks, Scribing, Combination Flats and Inserts.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of imposition methods.

Type and Title of Lesson	Lesson Plan	Lesson # 13

Lecture / Demonstration - Halftone drop-ins

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on halftone drop-ins,

Person: students
Performance: will produce a document on the computer with halftone drop-ins

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Computer lab set up; sample files on diskette; samples of output.

Introduction (focus, motivation, anticipatory set)
Focus on document creation with halftone drop-ins.

Content (key points)
Demonstrate document creation on the computer incorporating halftone drop-ins.
Discuss Peck, Chapter 7 and 8, Marks, Scribing, Combination Flats and Inserts.

Guided Practice (student activity and/or checking for understanding)
Students will create a document with halftone drop-ins, and turn them in for credit.
Read Peck, Chapter 8, Mortising and Butting Images, and Complimentary Flats, for next class.

Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of halftone drop-ins.

| Type and Title of Lesson | Lesson Plan | Lesson # | 14 |

| Lecture / Demonstration - Mortising and Butting Images, and Complimentary Flats |

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition:	Given instructions on mortising and butting images
Person:	students
Performance:	will strip halftone and line negatives using mortising and butting techniques on complimentary flats,
Criteria:	accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Stripping tables, negatives, flats and other supplies.

Introduction (focus, motivation, anticipatory set)
Review imposition techniques.
Focus on mortising and butting techniques.

Content (key points)
Discuss Peck, Chapter 8, Mortising and Butting Images, and Complimentary Flats
Discuss the use of complimentary flats
Demonstrate mortising and butting images as a "drop-in" technique on manually stripped flats

Guided Practice (student activity and/or checking for understanding)
Students will manually strip mortised and butted images with crop marks and center marks on complimentary flats. Blueline proof the flats and turn the flats and the blueline in for credit.
Read Peck, Chapter 8, Knockouts, Overprints, and Tints, for next class.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of mortising, butting images and complimentary flats.

| Type and Title of Lesson | **Lesson Plan** | Lesson # 15 |

Lecture / Demonstration - Knockouts, Overprints and Tints

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on knockouts, overprints and tints,

Person: students

Performance: will produce a document on the computer with knockouts, overprints and tints

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Computer lab set up; sample files on diskette; samples of output.

Introduction (focus, motivation, anticipatory set)
Review mortising, butting images and complimentary flats.
Ask the question: "What is a knockout?"
Focus on document creation with knockouts, overprints and tints.
Content (key points)
Demonstrate document creation on the computer incorporating knockouts, overprints and tints.
Discuss Peck, Chapter 8, Knockouts, Overprints and Tints.

Guided Practice (student activity and/or checking for understanding)
Students will create a document with knockouts, overprints, and tints, and turn them in for credit.
Read Peck, Chapter 10, Screen Tints for next class.

Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of knockouts, overprints and tints.

Type and Title of Lesson	Lesson Plan	Lesson # 16

Demonstration - Knockouts, Overprints and Tints

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on knockouts, overprints and tints,

Person: students
Performance: will strip line and halftone negatives using knockouts, overprints, and tints,

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Stripping tables, negatives, flats and other supplies.

Introduction (focus, motivation, anticipatory set)
Review knockouts, overprints and tints.
Focus on manually stripping knockouts, overprints and tints, on complimentary flats.

Content (key points)
Demonstrate manually stripping knockouts, overprints and tints, on complimentary flats.
Discuss Peck, Chapter 10, Screen Tints.
      Define dot patterns, screen ruling, screen values

Guided Practice (student activity and/or checking for understanding)
Students will strip knockouts, overprints and tints, on complimentary flats with crop marks and center marks. Turn in all flats and blueline proofs for credit.
Read Peck, Chapter 8, Masking and Peck, Chapter 10, Compositing, for the next class.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of knockouts, overprints and tints.
Remind students that there will be a test on Single-color Film Assembly a week from today.

Lesson Plan

Lecture / Demonstration - Masking and Compositing

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on masking and compositing,

Person: students

Performance: will produce a document on the computer with masked images, and manually composited prints

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)

Computer lab set up; sample files on diskette; samples of output.

Introduction (focus, motivation, anticipatory set)

Review knockouts, overprints and tints.

Ask the question: "What is a mask?"

Focus on computer-generated, masked images, and manually composited images.

Content (key points)

Discuss Peck, Chapter 8, Masking and Chapter 10, Compositing.

Demonstrate document creation on the computer incorporating masks.

Demonstrate film compositing techniques.

Demonstrate cutting rubylith masking material.

Guided Practice (student activity and/or checking for understanding)

Students will create a document with knockouts, overprints, and tints, and turn them in for credit. Read Peck, Chapter 5, Signatures and Finishing Considerations, and Chapter 9, Multiple Imaging.

Closure (recap and wrap-up and/or clean-up)

Orally check student's understanding of masking and compositing.

Type and Title of Lesson   # Lesson Plan | Lesson # **18** |

| Written test: Prepress imaging.   Lecture / Demonstration - Stripping and image assembly |

OBJECTIVE (What student should be able to do as the result of this lesson).

| **Condition:** Given information on single-color film assembly,
    Person: students
  Performance: will pass a test
    Criteria: with at least 70% accuracy.

    Condition: Given information on signatures and multiple imaging,
    Person: students
  Performance: will create multi-page signatures
    Criteria: accurately. |

INSTRUCTION (What the instructor will do to facilitate student learning).

| **Set Up** (Equipment and/or Materials that the Instructor Needs)

Test copies, materials for manual stripping test; signature samples and materials. |

| **Written Test** (At the beginning of class, includes a written test and a timed stripping project).

Introduction (focus, motivation, anticipatory set)
Ask the questions: "What is a dummy?" "What is a creep?" "What is a lip?"
Focus on signatures, finishing considerations, and multiple imaging.

Content (key points)
Discuss Prust, Chapter 5, Signatures and Finishing Considerations
      Define: Dummy, signature, running head, running foot, folio, binding margins, gutters,
         printer's and reader's spreads, a breakacross, folding terms, collating, lip, creep,
         mechanical binding concerns.
Demonstrate signature use and dummy construction.
Discuss Prust, Chapter 9, Multiple Imaging
      Discuss step-and-repeat, manual pin register systems,

Guided Practice (student activity and/or checking for understanding)
Students will construct a signature dummy for a multiple page document and turn it in for credit.
Read Peck, Chapter 10, Spreads and Chokes , for next class.

Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of signatures, finishing
considerations and multiple imaging. |

Type and Title of Lesson   # Lesson Plan | Lesson #   **19** |

| Lecture / Demonstration - Create a Two-color Form |

OBJECTIVE (What student should be able to do as the result of this lesson).

> **Condition:** Given instructions on creating a two-color form,
>
> **Person:** students
> **Performance:** will produce a computer-generated, two-color form,
>
> **Criteria:** accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Computer lab set up; sample files on diskette; samples of output.

Introduction (focus, motivation, anticipatory set)
Review finishing considerations, signatures, dummies and multiple imaging.
Ask the question: "What is a choke?"
Focus on computer-generated two-color form generation and spreads and chokes.
Content (key points)
Demonstrate forms creation on the computer using at least two colors.
Discuss Peck, Chapter 10, Spreads and Chokes.
       Define registration, spreads (swells), and chokes (shrinks).
       Demonstrate the use of the micro-modifier.
Demonstrate how spreads and chokes are used and how they are created.
       A positive is required for a choke. A negative is required for a spread.

Guided Practice (student activity and/or checking for understanding)
Students will create a form on the computer, using two or more colors, and turn in separated laser prints for credit. Read Peck, Chapter 11, Proofing for next class.

Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of forms creation and spreads and chokes.

Type and Title of Lesson	Lesson Plan	Lesson # 20

Demonstration - Knockouts, Chokes, and Chromacheck Proofs

OBJECTIVE (What student should be able to do as the result of this lesson).

> **Condition:** Given instructions on knockouts, chokes and chromacheck proofs,
>
> **Person:** students
> **Performance:** will manually strip a knockout and a choke, and produce a chromacheck proof
>
> **Criteria:** accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Stripping tables, micro-modifier, positives, negatives, flats, chromacheck and other supplies.

Introduction (focus, motivation, anticipatory set)
Review knockouts, spreads, chokes, and multiple imaging.
Focus on manually stripping knockouts, chokes and spreads, and chromacheck production.

Content (key points)
Demonstrate manually stripping knockouts, spreads and chokes.
Discuss Peck, Chapter 11, Proofing and Correcting.
Demonstrate chromacheck proofing procedures.
    Show students how to properly mount a chromacheck proof for client consideration.

Guided Practice (student activity and/or checking for understanding)
Students will manually strip a knockout and a choke with crop marks and center marks.
Turn in all flats and chromacheck proofs for credit.
Read Peck, Chapter 10, Trapping, for the next class.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of knockouts, spreads and chokes, and chromacheck proofing.

Type and Title of Lesson   # Lesson Plan | Lesson #   21 |

| Lecture / Demonstration - Trapping |

OBJECTIVE (What student should be able to do as the result of this lesson).

| **Condition:** Given instructions on trapping procedures,

Person: students
Performance: will produce a computer document demonstrating trapping,

Criteria: accurately. |

INSTRUCTION (What the instructor will do to facilitate student learning).

| **Set Up** (Equipment and/or Materials that the Instructor Needs)
Computer lab set up; sample files on diskette; samples of output. |

Introduction (focus, motivation, anticipatory set)
Review knockouts, spreads, chokes and chromacheck proofing.
Ask the question: "What is a trap?"
Focus on computer-generated trapping of multiple images.
Content (key points)
Demonstrate trapping procedures on the computer.
Discuss Peck, Chapter 10, Trapping and Registration issues.

Guided Practice (student activity and/or checking for understanding)
Students will create a document on the computer, demonstrating trapping procedures and turn in separated laser prints for credit.

Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of trapping.

| Type and Title of Lesson | Lesson Plan | Lesson # 22 |

Demonstration - Knockouts, Chokes, and Spreads

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition:	Given instructions on knockouts, chokes and spreads,
Person:	students
Performance:	will manually strip a knockout, choke, and spread and produce a chromacheck proof
Criteria:	accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Stripping tables, micro-modifier, positives, negatives, flats, chromacheck and other supplies.

Introduction (focus, motivation, anticipatory set)
Review knockouts, chokes and spreads.
Focus on manually stripping knockouts, chokes and spreads, and chromacheck production.

Content (key points)
Demonstrate manually stripping knockouts, chokes and spreads.

Guided Practice (student activity and/or checking for understanding)
Students will manually strip a knockout, choke and spread with crop marks and center marks.
Turn in all flats and chromacheck proofs for credit.
Read Peck, Chapter 10, Screen Angles, Moire and Color Registration, for the next class.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of knockouts, chokes and spreads, and chromacheck proofing.

Type and Title of Lesson

Lesson Plan

Lecture / Demonstration - Two-color Spread, Reverse, Knockout.

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on two-color spread, reverse and knockout procedures,

Person: students

Performance: will produce a two-color computer document demonstrating spreads, reverses, and knockouts

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)

Computer lab set up; sample files on diskette; samples of output.

Introduction (focus, motivation, anticipatory set)

Review knockouts, spreads, chokes and chromacheck proofing.

Focus on computer-generated two-color spreads, chokes, reverses and knockouts.

Content (key points)

Demonstrate two-color spread, choke, reverse and knockout procedures on the computer.

Discuss Peck, Chapter 10, Screen Angles, Moire and Color Registration.

Guided Practice (student activity and/or checking for understanding)

Students will create a document on the computer, demonstrating two-color spread, reverse and knockout procedures and turn in separated laser prints for credit.

Closure (recap and wrap-up and/or clean-up)

Orally check student's understanding of two-color spread, reverse and knockout procedures.

Demonstration - Two-color Spread, Reverse Knockout

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on two-color spread, reverse and knockout procedures,

Person: students

Performance: will manually strip a two-color spread, reverse, knockout, and produce a chromacheck proof

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)

Stripping tables, micro-modifier, positives, negatives, flats, chromacheck and other supplies.

Introduction (focus, motivation, anticipatory set)

Review knockouts, reverses, chokes and spreads.

Focus on manually stripping two-color knockouts, reverses, chokes and spreads, and chromacheck production.

Content (key points)

Demonstrate manually stripping two-color knockouts, reverses, chokes and spreads.

Guided Practice (student activity and/or checking for understanding)

Students will manually strip a two-color knockout, reverse, choke and spread with crop marks and center marks. Turn in all flats and chromacheck proofs for credit.

Review Peck, Chapter 10, Screen Angles, Moire and Color Registration, for the next class.

Closure (recap and wrap-up and/or clean-up)

Clean up all materials. Orally check student's understanding of knockouts, reverses, chokes and spreads, and chromacheck proofing.

Type and Title of Lesson   # Lesson Plan | Lesson #   25 |

Demonstration - Three-color Spread, Reverse, Knockout.

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on three-color spread, reverse and knockout procedures,

Person: students

Performance: will produce a three-color computer document demonstrating spreads, reverses, and knockouts,

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Computer lab set up; sample files on diskette; samples of output.

Introduction (focus, motivation, anticipatory set)
Review knockouts, spreads, chokes and chromacheck proofing.
Focus on computer-generated three-color spreads, chokes, reverses and knockouts.

Content (key points)

Demonstrate three-color spread, choke, reverse and knockout procedures on the computer.

Guided Practice (student activity and/or checking for understanding)
Students will create a document on the computer, demonstrating three-color spread, reverse and knockout procedures and turn in separated laser prints for credit.

Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of three-color spread, reverse and knockout procedures. Remind students of the final project which will be produced during the final two weeks of the class. Students should be formulating ideas for approval, prior to that time.

Lesson Plan

Demonstration - Three-color Spread, Reverse Knockout

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition:	Given instructions on three-color spread, reverse and knockout procedures,
Person:	students
Performance:	will manually strip a three-color spread, reverse, knockout, and produce a chromacheck proof
Criteria:	accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)

Stripping tables, micro-modifier, positives, negatives, flats, chromacheck and other supplies.

Introduction (focus, motivation, anticipatory set)
Review knockouts, reverses, chokes and spreads.
Focus on manually stripping three-color knockouts, reverses, chokes and spreads, and chromacheck production.
Content (key points)
Demonstrate manually stripping three-color knockouts, reverses, chokes and spreads.

Guided Practice (student activity and/or checking for understanding)
Students will manually strip a three-color knockout, reverse, choke and spread with crop marks and center marks. Turn in all flats and chromacheck proofs for credit.
Review Peck, Chapter 10, Screen Angles, Moire and Color Registration, for the next class.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of knockouts, reverses, chokes and spreads, and chromacheck proofing.

Type and Title of Lesson # Lesson Plan Lesson # 27

Demonstration - Spot Four-color.

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on producing four-color spot color,

Person: students

Performance: will produce a spot four-color computer document and separated laser output

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Computer lab set up; sample files on diskette; samples of output.

Introduction (focus, motivation, anticipatory set)
Focus on computer-generated spot four-color documents.

Content (key points)
Demonstrate spot four-color and separated laser output on the computer.
Demonstrate cartoon four-color mechanical separations, using ruby film, in preparation for the next class.

Guided Practice (student activity and/or checking for understanding)
Students will create a document on the computer, demonstrating spot four-color and turn in separated laser prints for credit.

Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of spot four-color procedures.
Remind students of the final project which will be produced during the final two weeks of the class. Students should be formulating ideas for approval, prior to that time.

Type and Title of Lesson	Lesson Plan	Lesson # 28

Demonstration - Spot Four-color

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on creating spot four-color,   **Person:** students   **Performance:** will manually strip a four-color cartoon strip and produce a chromacheck proof   **Criteria:** accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)   Stripping tables, micro-modifier, positives, negatives, flats, chromacheck and other supplies.

Introduction (focus, motivation, anticipatory set)   Review screen tints, process color application, and screen angles.   Focus on manually stripping a four-color cartoon strip, and chromacheck production.   Remind students that today is the last day to turn in the Final Project Proposal.   **Content** (key points)   Demonstrate manually stripping a four-color cartoon strip.   **Guided Practice** (student activity and/or checking for understanding)   Students will manually strip a four-color cartoon strip with crop marks and center marks.   Turn in all flats and chromacheck proofs for credit.   Review Peck, Chapter 10, Screen Angles, Color Registration, and Four-color Process for the next class.   **Closure** (recap and wrap-up and/or clean-up)   Clean up all materials. Orally check student's understanding of spot four-color procedures.

Type and Title of Lesson   # Lesson Plan   Lesson #   29

Demonstration - Digital Four-color Process.

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on producing process color,

Person: students

Performance: will produce a four-color process computer document and separated laser output

Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Computer lab set up; sample files on diskette; samples of output.

Introduction (focus, motivation, anticipatory set)
Focus on computer-generated spot four-color documents.

Content (key points)
Demonstrate four-color process and separated laser output on the computer.
Demonstrate manually stripped four-color process film, in preparation for the next class.

Guided Practice (student activity and/or checking for understanding)
Students will create a document on the computer, demonstrating digital four-color process and turn in separated laser prints for credit.

Closure (recap and wrap-up and/or clean-up)
Orally check student's understanding of digital four-color procedures.

Type and Title of Lesson # Lesson Plan Lesson # **30**

Demonstration - Manual Four-color process

OBJECTIVE (What student should be able to do as the result of this lesson).

> **Condition:** Given instructions on stripping four-color process,
>
> **Person:** students
> **Performance:** will manually strip four-color process and produce a chromacheck proof
>
> **Criteria:** accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Stripping tables, negatives, flats, chromacheck and other supplies.

Introduction (focus, motivation, anticipatory set)
Review process color applications, and screen angles. Focus on manually stripping four-color process, and chromacheck production. Remind students that the next four class periods will be open lab time for students to complete their final projects.
Content (key points)
Demonstrate manually stripping four-color process.

Guided Practice (student activity and/or checking for understanding)
Students will manually strip four-color process with crop marks and center marks. Turn in all flats and chromacheck proofs for credit.

Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Orally check student's understanding of four-color process procedures.

Type and Title of Lesson | **Lesson Plan** | Lesson # **31**

Open Lab for Final Projects

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition:	Given instructions on producing a personal, final project,
Person:	students
Performance:	will produce a four-color project combining digital and manual processes and produce a chromacheck proof
Criteria:	accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)

Stripping tables, micro-modifier, flats, chromacheck and other supplies and equipment.

Introduction (focus, motivation, anticipatory set)
Review the requirements for the personal final project.

Content (key points)

Guided Practice (student activity and/or checking for understanding)
The instructor will assist students as required. Students will produce a four-color project combining digital and manual processes with marks and center marks. Turn in all flats and chromacheck proofs for credit. Please attach the requirements sheet to the project for grading.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Remind students that they will have the next three classes to complete the final project, and there will be a written final on the regularly scheduled final period.

Type and Title of Lesson | # Lesson Plan | Lesson #   **32**

| Open Lab for Final Projects |

OBJECTIVE (What student should be able to do as the result of this lesson).

| **Condition:** Given instructions on producing a personal, final project, |
| **Person:** students |
| **Performance:** will produce a four-color project combining digital and manual processes and produce a chromacheck proof |
| **Criteria:** accurately. |

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)

Stripping tables, micro-modifier, flats, chromacheck and other supplies and equipment.

Introduction (focus, motivation, anticipatory set)
Review the requirements for the personal final project.

Content (key points)

Guided Practice (student activity and/or checking for understanding)
The instructor will assist students as required. Students will produce a four-color project combining digital and manual processes with marks and center marks. Turn in all flats and chromacheck proofs for credit. Please attach the requirements sheet to the project for grading.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Remind students that they will have the next two classes to complete the final project, and there will be a written final on the regularly scheduled final period.

| Type and Title of Lesson | **Lesson Plan** | Lesson # 33 |

Open Lab for Final Projects

OBJECTIVE (What student should be able to do as the result of this lesson).

> **Condition:** Given instructions on producing a personal, final project,
>
> **Person:** students
> **Performance:** will produce a four-color project combining digital and manual processes and produce a chromacheck proof
> **Criteria:** accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)
Stripping tables, micro-modifier, flats, chromacheck and other supplies and equipment.

Introduction (focus, motivation, anticipatory set)
Review the requirements for the personal final project.

Content (key points)

Guided Practice (student activity and/or checking for understanding)
The instructor will assist students as required. Students will produce a four-color project combining digital and manual processes with marks and center marks. Turn in all flats and chromacheck proofs for credit. Please attach the requirements sheet to the project for
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Remind students that they will have the next class to complete the final project, and must be turned in at the end of the period. There will be a written final on the regularly scheduled final period.

72

Type and Title of Lesson	Lesson Plan	Lesson # 34

Open Lab for Final Projects

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given instructions on producing a personal, final project,

Person: students
Performance: will produce a four-color project combining digital and manual processes and produce a chromacheck proof
Criteria: accurately.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)

Stripping tables, micro-modifier, flats, chromacheck and other supplies and equipment.

Introduction (focus, motivation, anticipatory set)
Review the requirements for the personal final project. Projects must be turned in today for full credit.

Content (key points)

Guided Practice (student activity and/or checking for understanding)
The instructor will assist students as required. Students will produce a four-color project combining digital and manual processes with marks and center marks. Turn in all flats and chromacheck proofs for credit. Please attach the requirements sheet to the project for grading.
Closure (recap and wrap-up and/or clean-up)
Clean up all materials. Remind students that the written final will be on the regularly scheduled final period, next week. Attendance at the final is mandatory.

Type and Title of Lesson	Lesson Plan	Lesson # 35

Written Exam

OBJECTIVE (What student should be able to do as the result of this lesson).

Condition: Given information regarding digital and manual prepress imaging,   **Person:** students   **Performance:** will pass a written exam   **Criteria:** with at least 70% accuracy.

INSTRUCTION (What the instructor will do to facilitate student learning).

Set Up (Equipment and/or Materials that the Instructor Needs)   Copies of the written exam, proportion wheels, and film examples.

Introduction (focus, motivation, anticipatory set)   Review the instructions for the final exam.   **Content** (key points)   **Guided Practice** (student activity and/or checking for understanding)   Students will take the final exam, covering all procedures demonstrated during the semester.   **Closure** (recap and wrap-up and/or clean-up)   Thank students for a fruitful semester and recommend further digital classes.

REFERENCES

Benson, P. (1995, October). Print facility offers state-of-the-art systems to meet client's needs. Quick Printing, 84-86.

Bruno, M. H. (Ed.). (1994). Pocket pal---A graphic arts production handbook. Memphis, TN: International Paper.

Duchesne, M. (1995, October). Short runs will prevail in the long run. In-Plant Printer, 22-23.

GATF Tech Alert 1996 Survey. (1995, November/December). GATF World, 2.

Haimes, R. (1995, November/December). Prepress is dead...long live prepress! Color Publishing, 41-43.

Jeffrey, N. (1995, November). Proof or consequences. American Printer, 42-46.

Jeffrey, N. (1996, February). No half measure. Digital & Prepress Links, 8-11.

Lamparter, W. C. (1994, January). Digital bridges. American Printer, 30-34.

LiPetri, J. (1995, September/October). New on your FM dial. Digital Imaging, 62-66.

McGrath, J. W. (1995, November). Tapping into the revolution: Distributed print-on-demand. Quick Printing, 70-75.

McKeon, J. J. (1994-95, Winter). Hi-Fi color: printing that 'pops.' Image World, 11-12.

Neubauer, B. (1995, September). It will impact your business. In-Plant Reproductions, 32, 35.

Parsons, B. (1995). Prepress, electronic prepress: A hands-on introduction. Albany, NY: Delmar Publishers.

Peterson, D. (1996, February). Training tactics. American Printer, 30-32.

Quick printing moves to the cutting edge. (1995, October). Quick Printing, 48-50.

Romano, F. (1995, May/June). Print: the final frontier. Color Publishing, 14.

Romano, F. (1996). Pocket guide to digital prepress. Albany, NY: Delmar Publishers.

Roth, J. (1995, July). Tracking the trends. <u>American Printer</u>, 48-50.

Roth, J. (1996a, February). Letters to the editor [Letter to the editor]. <u>American Printer</u>, 6.

Roth, J. (1996b, February). Editor's desk. <u>American Printer</u>, 8.

Ruggles, P. K. (1991). <u>Printing estimating.</u> Albany, NY: Delmar Publishers.

Sharples, H. (1994, June). Prime time for computer-to-plate. <u>Graphic Arts Monthly</u>, 80.

Shields, S. L. (1995, September/October). Digital presses meet the real world—the technology works, but selling its output remains a challenge. <u>Color Publishing,</u> 24-29.

Shuster, R. (1996, January/February). The future meets the press. <u>Adobe Magazine,</u> 42-47.

Stanton, A. P. (1995). The manager's guide to direct-to-plate. <u>GATF World, 7(5),</u> 33.

Stone, V. L. (1995, May). The right frequency. <u>In-Plant Reproductions,</u> 18-20, 48.

Stoy, J. W. (1995a, June). On-demand printing update. <u>In-Plant Printer,</u> 42-45.

Stoy, J. W. (1995b, December). The future of imagesetting. <u>In-Plant Printer</u>, 48, 57.

Thompson, D. (1995, November). One step at a time. <u>American Printer,</u> 50-51.

Vinocur, M. R. (1995, June). Remembering DRUPA 90. <u>American Printer</u>, 74.

Welcome to the age of computer-to-plate. (1995, Spring). <u>GATF/NAPL Sheetfed Operations Quarterly,</u> 1.