SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: GRPH 420 Department: Graphic Arts Technology

Course Title: Color Reproduction Processes Semester: Spring Year: 2002

Objectives/Competencies

Course Objective	Competencies
1. Students will be able to work with the fundamental of color theory.	1. Identify the electromagnetic spectrum. 2. Identify the visible spectrum of white light. 3. Explain photopic and scotopic vision. 4. Explain tristimulis color vision 5. Explain opponent color vision.
2. Students will be able to utilize the principles of color reproduction	1. Use the Maxwell Triangle. 2. Use the additive color system. 3. Use the subtractive color system. 4. Perform basic color separation with filters.
3. Students will become acquainted with the tools and techniques used for the purposes of color evaluation.	1. Operate a color densitometer and be able to measure the following: a. CMYK color density b. Apparent ink trap c. Hue error and grayness. 2. Operate a colorimeter and be able to measure the following:

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	a. XYZ tristimulis values b. XY chromaticity values c. CIELab & CIELCh. 3. Operate a spectrophotometer and graph a color on a spectral chart.
4. Students will be able to utilize the various color ordering systems and color spaces used in industry.	1. Define color with a three-dimensional color space: hue, saturation (chroma) and lightness. 2. Use absolute color order systems such as the Munsell system. 3. Plot a color in the various CIE color spaces: a. The chromaticity diagram b. CIELab c. CIELCh
5. Students will learn about the variables of color printing and their control.	1. Control of the black (K) printer on process color printing. 2. Accomplish color correction to compensate for ink pigment deficiencies. 3. Determine the need for undercolor removal (UCR) and gray component replacement (GCR).
6. Students will be able to utilize the principles of electronic color separation.	1. Use RGB filters to produce CMY color printers. 2. Use the concepts of dynamic range and tone compression. 3. Calculate the screen angle requirements for color separation sets.
7. Students will be able to make a basic set of color	1. Be able to scan a color negative or positive into an image

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separations.	processing software program. 2. Calculate scanning resolution vs. final image resolution requirements. 3. Process the color separations with imaging software, including UCR and GCR. 4. Output color separations on film with an imagesetter including setting screen angles; setting screen frequency; and adding registration marks, color bars, etc. 5. Produce an overlay color proof from the color separation film set.
8. Students will be able to make intelligent and knowledgeable color judgments.	1. Employ the specific job requirements to accurately view color samples, including lighting requirements and surround. 2. Use color monitors to prepare and proof color. 3. Compensate for certain color idiosyncrasies, which affect color judgment, such as fluorescence, color constancy, and metamerism.
9. Students will utilize the principles of color management.	1. Differentiate between the advantages and limitations of the different color proofing systems, including film produced proofs, electronic hard proofs, and soft proofs. 2. Employ gamut shape when calibrating various color management systems. 3. Employ the closed quality loop color management systems including the software based type systems.