School of Technology  
Eastern Illinois University  

Request for New Course

1. Catalog Description

   (a) Course number: AET 4953
   (b) Title: Color Management Technologies
   (c) Meeting times and Credit: 2-2-3
   (d) Term(s) to be offered: S or F
   (e) Short title: Color Management
   (f) Course description: Application of color theories, digital color reproduction, and quality control processes as they apply to color in the industries of printing, textiles, and web generated images.
   (g) Prerequisite: Industrial Technology Majors: AET 3343 Digital Media Technologies
                   Family & Consumer Sciences Majors: FCS 2244 Consumer Textiles: Care and Production FCS 3245 Textiles: Color Design Production
                   Or permission of the instructor.
   (h) Initial term of course offering: Spring 2005

2. Student Learning Objectives and Evaluation

   (a) Learning Objectives:
       Undergraduate: Upon completion of this course students will be able to:
       1. demonstrate and compare the different color models including the proper measurement, evaluation and specification of color using quality control instruments
       2. identify the capabilities and limitations of technologies used in various types of digital color management applications
3. analyze and demonstrate tone reproduction concepts including grayscale optimization 
4. compare conventional and digital color printing processes associated with color systems using specifications developed by International Color Societies 
5. demonstrate color management procedures printing digital designs on textiles, paper, and other substrates 
6. compare the color differences among dyes, pigments, textiles, papers and other substrates 

(b) Student evaluation: Undergraduate (U) & Graduate (G) students’ achievement of the stated objectives will be assessed and grades will be earned, based on activities such as research paper/poster presentation, examinations, lab experiments, team projects, and field trip report. 

• **Objective 1:** (demonstrate and compare the different color models including the proper measurement, evaluation and specification of color using quality control instruments) will be assessed by examinations questions for part of the 15% (U & G) of the examinations grade, and assessed by lab experiments for part of the 25% (U & G) of the lab experiments grade, and assessed by team projects for part of the 30% (U) and 20% (G) of the team projects grade. 

• **Objective 2:** (identify the capabilities and limitations of technologies used in various types of digital color management applications) will be assessed by lab experiments for part of the 25% (U & G) of the lab experiments grade, and assessed by team projects for part of the 30% (U) and 20% (G) of the team projects grade, and assessed by research paper/poster presentation grade for part of the 20% (U) and 30% (G) of the research paper/poster presentation grade, and assessed by field trip for part of the 10% (U & G) of the field trip grade, and assessed by examinations questions for part of the 15% (U & G) of the examinations grade. 

• **Objective 3:** (analyze and demonstrate tone reproduction concepts including grayscale optimization) will be assessed by lab experiments for part of the 25% (U & G) of the lab experiments grade, and assessed by team projects for part of the 30% (U) and 20% (G) of the team projects grade, and assessed by examinations questions for part of the 15% (U & G) of the examinations grade. 

• **Objective 4:** (compare conventional and digital color printing processes associated with color systems using specifications developed by International Color Societies) will be assessed by lab experiments for part of the 25% (U & G) of the lab experiments grade, and assessed by team projects for part of the 30% (U) and 20% (G) of the team projects grade, and assessed by research paper/poster presentation grade for part
of the 20% (U) and 30% (G) of the research paper/poster presentation grade, and assessed by field trip for part of the 10% (U & G) of the field trip grade, and assessed by examinations questions for part of the 15% (U & G) of the examinations grade.

- **Objective 5**: (demonstrate color management procedures printing digital designs on textiles, paper, and other substrates) will be assessed by lab experiments for part of the 25% (U & G) of the lab experiments grade, and assessed by team projects for part of the 30% (U) and 20% (G) of the team projects grade, and assessed by research paper/poster presentation grade for part of the 20% (U) and 30% (G) of the research paper/poster presentation grade.

- **Objective 6**: (compare the color differences among dyes, pigments, textiles, papers and other substrates) will be assessed by lab experiments for part of the 25% (U & G) of the lab experiments grade, and assessed by team projects for part of the 30% (U) and 20% (G) of the team projects grade, and assessed by research paper/poster presentation grade for part of the 20% (U) and 30% (G) of the research paper/poster presentation grade, and assessed by field trip for part of the 10% (U & G) of the field trip grade, and assessed by examinations questions for part of the 15% (U & G) of the examinations grade.

Students will be evaluated using the below categories as assigned above for each course objective.

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate</th>
<th>Graduate</th>
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</thead>
<tbody>
<tr>
<td>Research Paper/Poster Presentation</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>Exams</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Lab experiments</td>
<td>25%</td>
<td>25%</td>
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<tr>
<td>Team Projects</td>
<td>30%</td>
<td>20%</td>
</tr>
<tr>
<td>Field Trip</td>
<td>10%</td>
<td>10%</td>
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(c) This course will be delivered traditionally with computer support.

(d) Course number is 4953 and the additional requirements for graduate Students will include:

1) Course objectives for graduate students:
   - identify the basic requirements for international design and graphic solutions for a quality color compliance program

2) Projects for application and analysis:
   - Research paper and/or poster presentation submitted to either a peer-reviewed professional journal or at a national conference.

3) Graduate students whose research paper and/or poster presentation that are not accepted or submitted to either a journal or at a
national conference will be presented and evaluated by two faculty members.

(e) This course will be writing active.

3. Outline of the Course
   (a) Specify units of time: The course will be offered in 2-2-3 format.
   (b) Two (50 minute) lectures and two 50 lab minutes per week for 15 weeks. Additional open lab hours are available.

Course Outline is as follows:

I. Introduction of course and color printing 1 week
II. Principles of color and vision 2 weeks
   III. Principles and measurements of color models 3 weeks
       A. Instrumentation
       B. Calibration of input/output devices
IV. Digital Printing Devices 2 weeks
    A. Inkjet
    B. Dye sublimation
    C. Electrostatic process
    D. Analog devices
V. Design procedures 4 weeks
    A. Dyes
    B. Pigments
VI. Digital Color Management Workflow 2 weeks
VII. International requirements 1 week
    A. International Color Society
    B. Color compliance programs

4. Rationale
   (a) Purpose and Need:
       This course will help prepare students for career paths in the application for products produced by digital color printing technology. Students will develop a clear understanding of customer needs and a commitment to the highest level of quality. Students will learn how to effectively deploy technology to satisfy customer requirements in color consistency and quality of digital color printing and web color technology. Students will be better prepared to communicate the new capabilities of digital color technology in the business world. Finally, students will be competent graduates in a competitive marketplace with other graduates from nationally recognized programs in digital printing and imaging technologies.
   (b) Justification of the level of the course prerequisites:
       This course will be open to juniors, seniors, and graduate students who have completed the necessary prerequisites.
   (c) Similarity to existing courses:
       This course is not similar to any existing course in any academic units on this campus.
   (d) Impact on Program:
(1) This course is an elective in the undergraduate Industrial Technology concentration of Digital Printing, Imaging, and Web Technology in the School of Technology.

(2) This course is an elective in the Master of Science in Technology in the School of Technology.

5. Implementation

(a) Implementation: Dr. Philip Age, School of Technology

(b) Additional Costs to Students  $75 lab/consumables material fee

$25 field trip fee


Bridg’s Color Handbooks:

6. Community College Transfer

   There is no community college course that is equivalent.

7. Date approved by the School of Technology Curriculum Committee: April 8, 2004

8. Date approved by the Lumpkin College of Business & Applied Sciences Curriculum Committee May 3, 2004

9. Date approved by CAA August 26, 2004 CGS September 21, 2004