

Summer 2005 PHYSICS 363, 410, 510 COLOR PHOTOGRAPHY with John Barna
Class meets 8:00am – 10:20am on Mondays, Tuesdays, Wednesdays, Thursdays
June 20 to July 14 — Room 335 Lincoln Hall

This is an upper division science course dealing with almost all aspects of color photography. We explain and explore countless fundamental technical and scientific principals of color photography including its history, the physiology explanations of color vision, color film and print processing, and digital photography. We also outline many of the scientific uses for photography. Instruction in camera usage and other photo techniques introduced as time permits. You are asked to make some color photographs and bring those, and other photographs you find in publications, to the class. Assignments include quizzes, midterm, short paper, making color photos, and an intriguing final project where you share your own subject related discoveries about color and photography with the class.

ASSIGNMENTS

- A. Midterm Quiz. First part of class period. Stick around for slides or lecture after test. (Quiz Thursday, June 30)
- B. Produce at least ONE short paper (one page MAXimum) related to color photography. (Due on Tuesday, July 5)
- C. Using your own camera, a borrowed camera, or a disposable camera, or a digital camera, produce at least FIVE color photographs using digital media, color negative and/or color slide film, either processed by yourself or by a local photofinisher. (Due Thursday, July 7. NOTE: Assignments "D" and "E" below also due July 7)
- D. Produce at least THREE color prints, by yourself, of your own photographs, either at a rental darkroom, at home, at a camera store using a do-it-yourself color print machine, a computer and a digital printer, or using a color copy machine. (Due Thursday, July 7 with "C" & "E")
- E. Turn in to John a brief description of your final term project. (Due by or before Thursday, July 7 with "C" & "D")
- F. Produce a final term project somehow related to the science of photography, to be presented to the class on the last two days: (Wednesday, July 13 and Thursday, July 14). **This is not necessarily an oral report. If you wish, I can interview you in a very relaxed manner so that you can share your information in as painless manner as possible. Turn in your "Search Path." right after your presentation. PH 510 students must investigate one more topic. See John.**
- G. Hand in to John, a *Search Path* outline containing your sources of information, including, but not limited to: bibliography, World-Wide-Web trail, interviews, location scouting, media viewing, experimentation, etc. Also include a few words describing each entry and short comments about your project, e.g., why it was valuable, why it was frustrating; what surprised you, what you expected, why it did not fulfill your expectations, etc. (Turn in to John when you present your final project.)

IDEAS

In place of a final and research paper I want you to go on a search for interesting information, details, theories, ideas, events, scientific explanations, or other discoveries you find related to something mentioned, shown, or discussed in this class. I much prefer the word *search* to *research* (which implies looking for something already known). Searching is exploring, setting out, not knowing where you are going, and discovering something new and very exciting. Searching is even more exciting if you are following a path towards something that truly interests you. I require at least four different types of sources on your search path. Do not simply look on the Internet. Be creative. Interview experts, look in antique stores or libraries for early examples or articles in old magazines or books, watch videos, go to libraries, archives, contact businesses, government agencies or research facilities. Remember, your papers and searches need not relate to "color photography." They may be about *color* or *photography*. You may wish to investigate silver, the halides, photo chemistry, organic chemistry related to dyes, gelatin, colloids, film bases, other products or concepts which evolved from photographic science. Further, explore human and animal vision and other imaging systems used by life forms and machines. Examine the influences of warfare, space exploration, economics, business, invention, or the computer upon photography. Travel through the history, the present and the future of image making.

GRADING POLICY

You cannot learn or share if you are not here. Two unexcused absences = minus one letter grade. Attendance counts for 20% or more of your grade. Tests, written and photo assignments account for 30% of your grade. 50% of your grade is based upon your search and search path.

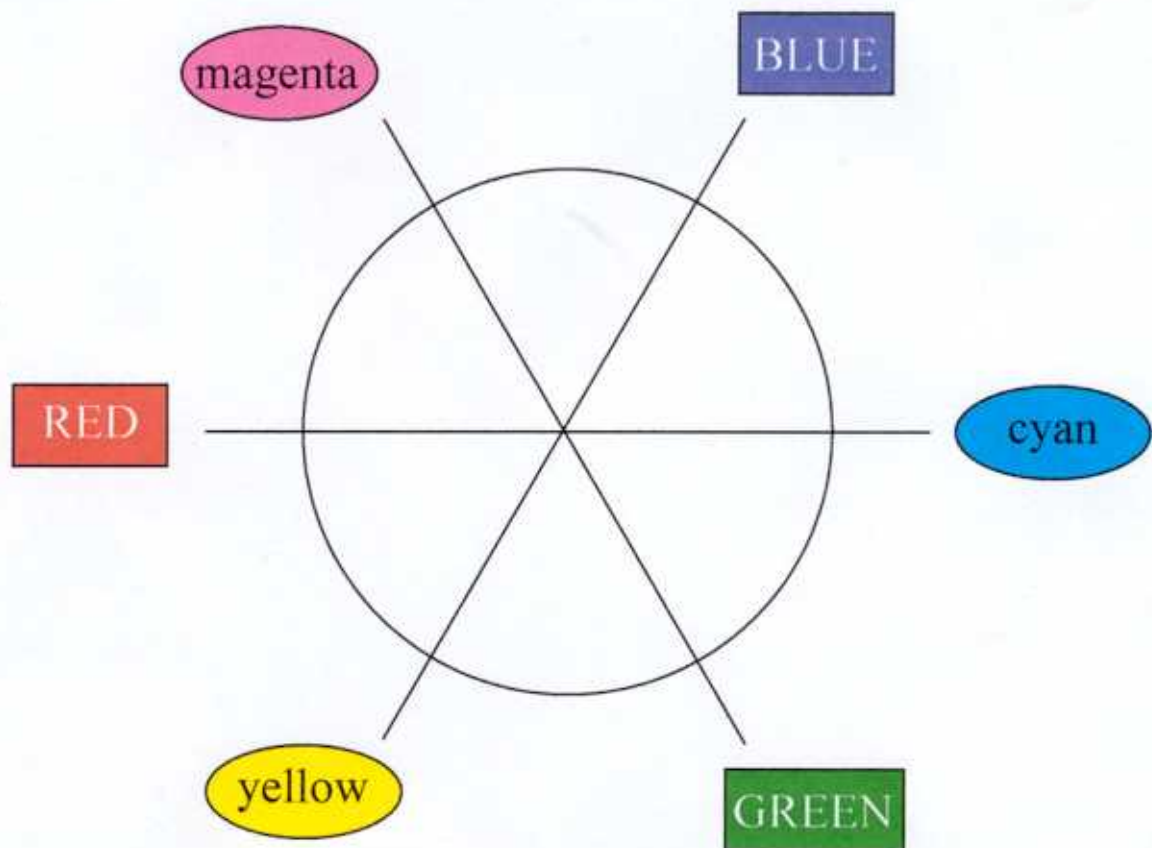
SUMMER 2005 PHYSICS 363, 410, 510 COLOR PHOTOGRAPHY JUNE 20-JULY 14 8:00-10:20 AM

<p>Mon. June 20 Introduction, color wheel, etc. Assignments, requirements, etc.</p>	<p>Tues. June 21 Project Ideas. Brief look at photo history and color photo history.</p>	<p>Wed. June 22 Color Film. Black and white film and prints.</p>	<p>Thurs. June 23 C-41 color negative developing. EP-2 Color print process. E-6 color slide process.</p>
<p>Mon. June 27 Color Theory.</p>	<p>Tues. June 28 Human eye vs. camera. How eye and camera record color and light.</p>	<p>Wed. June 29 Color Temperature.</p>	<p>Thurs. June 30 Midterm Color Printing from color negatives and from slides.</p>
<p>Mon. July 4 Holiday</p>	<p>Tues. July 5 One-Page Paper Due History of color photography. Evolution of commercial color photography.</p>	<p>Wed. July 6 Open Topic</p>	<p>Thurs. July 7 Photos & Project Topic Due Show 5 color photos made yourself or by a photofinisher and 3 color photos made by yourself. Describe your search!</p>
<p>Mon. July 11 John shows his photographs and explains why he does what he does and why he chooses the equipment he uses.</p>	<p>Tues. July 12 Digital photography: Its history, modern equipment. What you need to know before you buy. What is coming in the near future. Examples of digital images.</p>	<p>Wed. July 13 Projects Half the class presents the results of their searches. All students should attend!</p>	<p>Thurs. July 14 Projects The rest of the class presents the results of their searches. All students should attend!</p>

Note: Entire calendar is subject to change. We may have guest speakers, special events, or unusual contributions from students.

Classroom: 335 — Lincoln Hall
Instructor: John Barna

THE COLOR WHEEL (MEMORIZE ENTIRE PAGE) TEST TOMORROW!



ADDITIVE PRIMARIES: RED, GREEN, BLUE

Subtractive Primaries: cyan, magenta, yellow

COMPLEMENTARY PAIRS: RED & cyan

(These colors are opposite each other on the color wheel) GREEN & magenta

BLUE & yellow

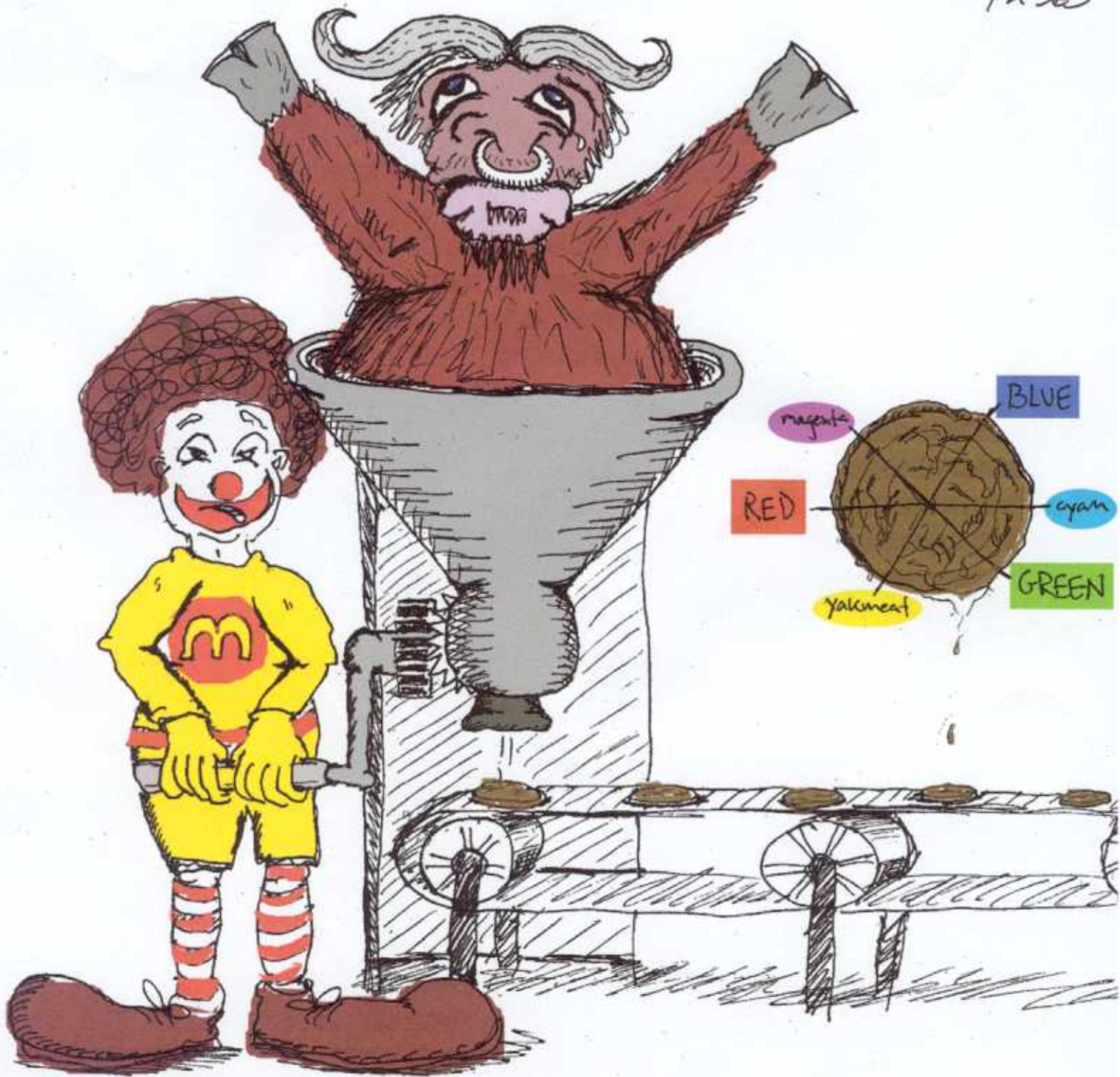
(yellow + magenta equals RED) (y+m=R)

(cyan + yellow equals GREEN) (c+y=G)

(magenta + cyan equals BLUE) (m+c=B)

9/29/95

Justin Callaway
Color Photography
Ph 363



Ronald
MDonald's
Burgers
Contain
Green
Yakmeat

Your search should include a minimum of four different source types. The source types may include (but are not limited to: the internet; encyclopedias; books; periodicals; videos; audio sources; CDs; interviews; personal observation; experimentation; phone or other contact with manufactures, government agencies, etc. You should include at least fifteen different steps on your search spread among your source types.

Remember: Your searches must be scientific, technical, historical, or otherwise related to an upper division physics class. Please see your syllabus for more information.

Here are some searches done in past classes:

- Underwater photography
- Aerial photography
- Four-color commercial printing
- Latest in digital photo cameras, printers, software
- How color Xerox works
- How infants see
- Polaroid photography (how black and white and color Polaroid systems work
- Edwin Land, the inventor of Polaroid filters, cameras, etc.
- How do polarizing filters work? What are their many uses?
- Antique color processes including gum-dichromate, cyanotype, sepia, Lumiere Autochrome, other color photo experiments.
- Modern color processes: Kodachrome, Agfachrome, Cibachrome, Fujichrome, Kodacolor, etc
- Dye transfer printing
- Digital photo compression – JPEG, BMP, PICT, Targa, Tiff, etc.
- How bees see.
- Reciprocity failure
- Color and/or visual perception and psychology
- History of photography and/or evolution of photographic industry of a particular country or region, perhaps related to your family heritage.
- Dyes vs. pigments. Where do they come from? What is their history?
- Filters — filter factors — silicone blue cell light meters
- Dichroic filters. How are they made. What is their purpose?
- Light meters — history — types — purposes
- Artificial light — light bulbs — flash — Electronic Flash. Their history, use, value and problems
- Gelatin: its use in photography. Is there a substitute for making conventional photographic film to satisfy vegetarians and vegans.
- Colorizing movies Technicolor movies
- History of cinema technology
- Nitrate film, safety film in movies and still photography
- Steganography: hiding codes in images — invisible secrets. Is this related to digital watermarks?
- Infrared photography, color infrared, digital infrared (Flir cameras). Infrared cut-off filters.
- Ultraviolet photography. Ultraviolet cut-off filters
- Holography. Are full color holograms possible? Any new discoveries?
- 3-D photography:** Its history. Modern equipment. Do-it-yourself methods. Scientific value.
- Ilford XP-2, Kodak 400BW Portra, and Kodak T400 CN chromogenic film to make black and white prints with C-41 color negative processing and color or black-and-white printing. Is it any good? What are the advantages and disadvantages? Who uses it? Why?
- Tricolor exposures. Meter the scene. Place a camera that allows multiple exposures without advancing the film on a steady tripod. Aim it as a scene that has both stationary and moving