

COLOR SYSTEMS

10 51 816

I. Course:

1051-816 COLOR SYSTEMS

1.1 Four (4) Credit Hours

1.2 Prerequisites: programming (1051-726 or equivalent)
and colorimetry (1051-775 or 1050-702)

II. Course Catalog Description:

Students in this course will learn the concepts and develop tools used for incorporating color peripherals into successful color reproduction systems. Methodologies for device calibration and device characterization will be explored. Extensive programming assignments and independent projects will be used as a basis for uncovering the subtleties of producing modern device profiles and for interacting within and improving upon industry standard color management.

III. Course Objective:

3.1 Ability to understand and implement device-independent color imaging systems

3.2 Knowledge of ICC and other standard approaches to color management

3.3 Application of knowledge obtained in imaging and color science courses

IV. Bibliography:

7.1 Required Texts

A. G. Sharma, **Digital Color Imaging Handbook**, CRC Press, New York, 2003.

B. ICC, **ICC Profile Format Version** (current version at www.color.org).

7.2 Supplemental Reading

C. B. Fraser, C. Murphy and F. Bunting, **Real World Color Management**, Peachpit Press, Berkeley, 2003.

D. A. Sharma, **Understanding Color Management**, Delmar Learning, Clifton Park, 2004

E. M. Fairchild, **Color Appearance Models**, Addison Wesley, Reading, 1997.

F. R. Berns, **Billmeyer and Saltzman's Principles of Color Technology**, Wiley-Interscience, New York, 2000.

G. Other ICC material found under www.color.org.

V. **Abbreviations:**

DCIH = Digital Color Imaging Handbook
UCM = Understanding Color Management
RWCM = Real World Color Management

VI. **Course Outline:**

Week 1

Class 1:

Introduction

Reading:

DCIH Chapter 1 (entirety)
DCIH Chapter 2 section 6

Handouts (see web site)

syllabus.pdf - this file
README FIRST.pdf
week1reading.pdf
HW1_ColorSystemDefinition.pdf
(due Class 3)
HW2_nonColorNDtrans.pdf
(due Class 4)
Project1_parser.pdf
(due Class 7)

Class 2:

ICC Color Management and the ICC profile

Week 2

Class 3:

Discussion of HW1/ Introduction

HW1 due

Reading:

UCM Chapter 5 (entirety)

Handouts (see web site)

UCMChap5.pdf
HW3_onTheMarket.pdf
(due Class 5)

Class 4:

Discussion of HW2 and Parser Lab

HW2 due

Handouts

Week 7:

Class 13: Profile builder demos and discussions
Project 2 due

Class 14: Color mapping I

Week 8:

Class 15: Student Presentations: special topics

Reading:

DCIH Chapter 5 (entirety)

RWCM Chapters 5, 6, 7, 8 (entirety)

Handouts (see web site)

RWCMchap5to8.pdf

Class 16: Student Presentations: special topics

Week 9:

Class 17: Color mapping I I

Class 18: Calibration/ Characterization

Week 10:

Class 19: CMM Lab

Class 20: Open systems demos: student and commercial
Cup cakes, juice and party favors
Project 3 due

VII. Expectations:

Regardless of the topic being covered, my main goal is that students should improve problem solving skills by the end of the course. I am particularly interested in seeing people grow in universal basics such as:

- time management
- use of resources
- participation in discussions
- participation in helping others
- following directions
- planning and executing an approach

In this class, it should become self-evident how important these skills will be. I will elaborate on each below.

Time management: This course is only 10 weeks long, but we do have a convenient two week vacation. We have a lot of material to cover, three projects to complete and two presentations. Every day is going to count from the first day of class. There is no time for long periods of resting or distraction. Bear this in mind as you look over the syllabus and plan out your schedule. The second project builds on the first, changing from read to write. The third project builds on the first adding image processing. Keep these in mind as you plan the projects.

Use of resources: You have your book, an instructor, people in the lab, the other class students, a world-wide-web, on-line discussion areas, email, phone, your own brain, and many, many other resources available to you. When you need help or would like clarification, you must make good use of your resources. You are going to have other classes and other demands. Don't be surprised or expect sympathy if you discover late in the quarter that the assignments are not as easy as you had hoped. Start early and keep at it if you expect to finish all the assignments.

Participation in discussions: This course will not work without lively, interested, informed discussions. You must participate.

Participation in helping others: No question: you learn a topic best by teaching it to others. Helping others with concepts and with programming is an essential aspect of this course.

Following directions: Read the assignments carefully, understand the expectations and take advantage of the resources available to you fulfill those expectations on-time.

Planning and executing an approach: All of the above skills are going to come into play in the plan and execution of the assignments.

VIII. Assignments:

Homeworks

- Unless the means for handing is explicitly stated otherwise, please email me a Word document before class the day the assignment is due or before midnight if there is no class scheduled for that day.

Programming assignments

- Please email me a zip file of a directory that contains an entire set of your program files including all source and example input files. There must be a README file that explains to me how to run your program and includes a description of how you satisfy or not the assignment. Please email to me these files before class the day the Project is due (see Syllabus for dates).

Student presentations

- Please email me your PowerPoint or Keynote presentation and a 2 page (at least) writeup before class the day of your presentation.

IX. Grading:

Please expect a 'B'

Everybody in this course is going to be working hard, probably as hard as you have worked in any course. By meeting the following standards you will get your well deserved grade:

- hand-in your assignments on-time
- take advantage of available resources to solve problems
- make significant progress toward the expectations of the assignments
- actively and enthusiastically participate in discussions

You may earn an 'A' if you:

- consistently go beyond the minimum expectations on the assignments
- take leadership in the discussions
- are instrumental in helping other students

You will be penalized if you:

- consistently hand in assignments late
- do not participate in class discussions
- hand in work that is obviously others'
- have complaints about assignments as they become due
 - these assignments are difficult and must receive your attention early

Have fun, learn a lot and enjoy the quarter.