Course Title	:	Colour Science and Digital Applications
Course Code	:	CLD9005/GED119/CDS119
Recommended Year of Study	:	Any
No. of Credits/Semester	:	3
Mode of Tuition	:	Sectional Approach
Class Contact Hours	:	3 hours per week
Category in Major Prog.	:	Science, Technology and Society Cluster Course/General Education Category D/Free Elective
Prerequisite(s)	:	None

Brief Course Description

This course introduces a scientific approach to understanding colours as well as the current digital technology for mastering colours. Apart from the theoretical and instrumental bases for analyzing colours, emphasis is placed on practical applications of digital colour technology in areas such as photography and publishing. Students will also acquire skills in relevant software and equipment.

Aims

This course is designed as a self-contained course with a balanced approach to both the science and technology of colours. It aims at promoting students' scientific thinking in a familiar subject area as well as introducing them to the latest digital technologies for colours.

Learning Outcomes

On completion of this course, students will be able to:

1. Understand relevant scientific principles of colour.
2. Measure, analyse and present colours objectively and scientifically.
3. Identify and select digital colour technologies for practical applications.
4. Apply relevant software and equipment for colour-related tasks.
5. Discuss colour in relation to relevant topics in humanities.

Measurement of Learning Outcomes

1. Assessed participation in classroom and laboratory sessions measures students' participation in the course based on their attendance as well as their contribution in class discussion.
2. Introduced in lectures and demonstrated in laboratory sessions, students' understanding of the scientific principles of colour will be tested through laboratory exercises and a written examination. Both the theoretical and practical aspects are addressed in the examination.
3. A study project will provide students the opportunity to gain experience on practical applications of digital colour technology. The project will test students on the scientific principles behind the technology of a digital colour application and require them to assess the relevance of the technology to the application.
4. Students are required to present their findings in the form of written reports and oral presentations. The report will be assessed for: 1) clarity and logic, 2) organisation, 3) methodology and rigor, and 4) analysis of results. The oral presentation will be assessed for: 1) organisation, 2) informativeness, 3) quality of delivery and 4) response to questions.
5. Students will also learn and apply skills in software and equipment through a series of laboratory exercises which form a major part of the continuous assessment. Assessment of these exercises will measure students' ability to apply relevant equipment and software in measuring, analysing and presenting colours as well as their understanding of the strengths and weaknesses of these tools.

Indicative Content

Physics of colour

Colour and light, electromagnetic spectrum, light and energy, sources of light

Colour and vision

Structure and mechanism of vision, colour blindness, colour psychology, colour illusions

Colour and humanities

Colour naming, colour psychology, colour in fine art and design

Colour measurement and models

Reflectance spectrophotometry, additive and subtractive colour models, RGB, CMYK, LAB

Colour management and reproduction

Principles of digital colour displays and printers, calibration, ICC profiles

Digital colour applications

Photography, colour separation, colour correction, restoration and retouching, creative arts.

Teaching Method

The scientific principles are introduced and demonstrated in lectures and laboratory sessions through examples. Students acquire various techniques through hand-on exercises during laboratory sessions. They will also study real-world applications through projects.

Assessment

Class Attendance and Participation	:	5%
Laboratory exercises	:	30%
Project	:	25%
Examination	:	40%

Required/Essential Readings

Fraser, Murphy, Bunting, *Real World Color Management*, Peachpit Press, 2nd ed., 2005.

Pete Rivard, *Digital Color Correction*, Cengage, 2006.

Recommended/Supplementary Readings

D. Margulis, *Professional Photoshop: the classic guide to color correction*, Wiley, 2007.

H. C. Lee, *Introduction to Color Imaging Science*, Cambridge, 2005.

H. Johnson, *Mastering Digital Printing*, Thomson, 2005.

S. Bleicher, *Contemporary Color: Theory & Use*, Cengage, 2012.