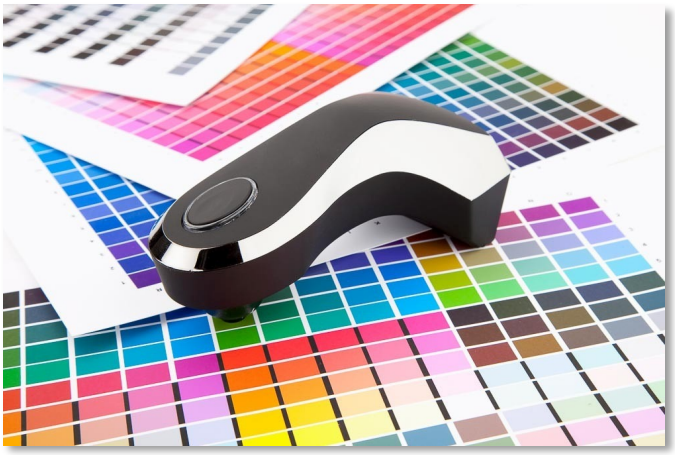
Colour Management - Course Overview



Lesson 1 – Introduction to Digital Colour

This first lesson introduces the fundamentals of colour communication, measurement, and control in a printing environment.

To use colour effectively, it must be kept under tight control. The colour workflow begins with the designer's ideas and the customer's specifications. From there, these colours must be communicated among several different individuals who will reproduce the colours on many different devices.

At each stage of production, output from the previous step becomes the input for the next process. Every exchange brings the colour into a new colour space, from a photographic scene, to a computer monitor RGB, to CMYK process for proofing, and then printing on a variety of systems. And every evaluation is made by a different viewer under new viewing conditions.

So, how do we ensure that the client's original ideas and specifications will remain intact throughout this complicated process?

In short, the answer is colour measurement - if you can measure colour, you can control it.

Lesson 2 – Light, Illumination and Colour

To help you clearly understand how colour is measured, we should first study the fundamentals of colour's physical and physiological properties.

Colour results from an interaction between light, an object, and the viewer. All three elements must be present for colour as we know it to exist. Let's examine colour's origins in more detail by first studying light.

Lesson 3 – Colour Communication

Colour is a visual, perceptual property in human beings. Colour derives from the spectrum of light interacting in the eye with light sensitive cells. In our environment, materials are coloured depending on the wavelengths of light they reflect or transmit.

Once we see colour, our challenge is to describe and communicate colour in a measurable, consistent and clear way in order for everyone responsible for reproducing colour in a workflow can do so without losing more colour than absolutely necessary. So let's delve deeper into the way we describe and communicate colour.

Lesson 4 – Colour Measurement and Control

Now that we've learned the fundamentals of colour and the different ways we can communicate colour data, let's look at the ways we can collect this data. There are two instruments that measure colour - spectrophotometers and colourimeters.

We'll take a more detailed look at these instruments, along with a third commonly used graphic arts instrument, the densitometer. Then, we'll take a look at different types of colour measurements and how they are used during specific phases of the printing and graphic arts production workflow.

Lesson 5 – Working with ICC Profiles

The key to successfully interpreting and managing the transfer of virtual colour is dependent on being able to precisely define the colour gamut and operational behaviour of the device with which it was produced. This can be accomplished by characterising the colour rendering capabilities of a device and creating a device specific profile that defines its colour gamut. Without a profile to describe the colour behaviour of the device of origin, RGB or CMYK percentages are ambiguous; they mean nothing (or at best provide generalised information) when sent to downstream devices.

A device specific profile will give universal meaning to RGB and CMYK data. When a profile is embedded in or tagged onto an RGB or CMYK image, it is as if the image carries with it a language translator that can be consulted to translate the value of each RGB pixel or CMYK tonal percentage into the colour language understood by the destination device. Let's discover how profiles are implemented in a workflow to ensure consistent, accurate colour. behaviour