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**Course Title:** Human Computer Interaction
**Course Code:** CSC 406

1. ***What is color harmony? Discuss why color harmony is important in HCI.?***

In color theory, color harmony refers to the property that certain aesthetically pleasing color combinations have. These combinations create pleasing contrasts and consonances that are said to be harmonious. These combinations can be of complementary colors, split-complementary colors, color triads, or analogous colors. Color harmony has been a topic of extensive study throughout history, but only since the Renaissance and the Scientific Revolution has it seen extensive codification. Artists and designers make use of these harmonies in order to achieve certain moods or aesthetics. It has been suggested that "Colors seen together to produce a pleasing affective response are said to be in harmony". However, color harmony is a complex notion because human responses to color are both affective and cognitive, involving emotional response and judgement. Hence, our responses to color and the notion of color harmony is open to the influence of a range of different factors.

Color schemes have a large impact on human-computer interaction, color can greatly improve user interfaces if used correctly, but can also reduce the functionality of the interface if used inappropriately. Important factors of designing color interfaces include simplicity, consistency, and clarity. Firstly, you want to keep the color scheme fairly simple. Simplicity can be achieved by using the four primary colors, which are red, green, yellow, and blue. Consistency is also another important factor when designing an interface. Colors should be assigned to a particular type of concept or to help classify information. This technique helps users to retain more information in their short-term memory. Clarity and the concise use of color aids in helping users identify items more efficient.

1. i COMPONENTS OF COLOR

As we now know all perceived colors can be represented by three independent variables, either the LMS responses, or the tristimulus values under the primaries of a given color system, such as RGB or XYZ. In many situations (e.g., computer image processing), it is more convenient to represent a color by a different set of three independent variables HSL (or HSI, HSV). These are defined as

Hue: the dominant wavelength, the redness of red, greenness of green, etc.

Saturation: the purity of the color, or how much white is contained in the color. For example, red and royal blue are more saturated than pink and sky blue, respectively.

Luminance (intensity, value): the intensity of the light.

Brightness: for measuring self-luminous objects that emits light (CRT, etc.)

Lightness: for measuring reflected light.

The hue, saturation and luminance can be obtained given the tristimulus values of a color under any color system.

ii. Primary Colors:

Primary colors (or primary colors) are sets of colors that can be combined to make a useful range of colors. The primary colors are those which cannot be created by mixing other colors in a given color space.

For subtractive combination of colors, as in mixing of pigments or dyes for printing, the CMYK set of primaries is often used. In this system the primary colors are cyan, magenta, and yellow.[1] Other sets include the RYB system of red, yellow, blue, especially used by artists.[2]

For additive combination of colors, as in overlapping projected lights or in television and computer screens, the primary colors normally used are red, green, and blue.

iii. Secondary Colors:

Secondary colors are colors made from two primary colors. In RYB, the secondary colors are orange, mixed from red and yellow, green, mixed from yellow and blue, and purple, mixed from red and blue. In RGB, the secondary colors are yellow, mixed from red and lime, cyan, mixed with lime and blue, and magenta, mixed from red and blue. The secondary colors from RYB are known as OGP, and from RGB, it is CMYK. When mixed with primary colors, it makes a tertiary color.

iv. Tertiary Colors:

**Teritary colors** are colors mixed from [primary colors](https://simple.wikipedia.org/wiki/Primary_colors), and [secondary colors](https://simple.wikipedia.org/wiki/Secondary_color).

List of teritary colors[[change](https://simple.wikipedia.org/w/index.php?title=Tertiary_color&veaction=edit&section=1) | [change source](https://simple.wikipedia.org/w/index.php?title=Tertiary_color&action=edit&section=1)]

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| --- | --- | --- | --- |
| **Color** | **Color Name** | **Mixed from Prim. Color** | **Mixed from Sec. Color** |
|  | [Red-Orange](https://simple.wikipedia.org/w/index.php?title=Red-Orange&action=edit&redlink=1) | [Red](https://simple.wikipedia.org/wiki/Red) | [Orange](https://simple.wikipedia.org/wiki/Orange) |
|  | [Orange-Yellow](https://simple.wikipedia.org/w/index.php?title=Orange-Yellow&action=edit&redlink=1) | [Yellow](https://simple.wikipedia.org/wiki/Yellow) | Orange |
|  | [Yellow-Green](https://simple.wikipedia.org/w/index.php?title=Yellow-Green&action=edit&redlink=1) | Yellow | [Green](https://simple.wikipedia.org/wiki/Green) |
|  | [Blue-Green](https://simple.wikipedia.org/w/index.php?title=Blue-Green&action=edit&redlink=1) | [Blue](https://simple.wikipedia.org/wiki/Blue) | Green |
|  | [Blue-Violet](https://simple.wikipedia.org/w/index.php?title=Blue-Violet&action=edit&redlink=1) | Blue | [Violet](https://simple.wikipedia.org/wiki/Violet) |
|  | [Red-Violet](https://simple.wikipedia.org/w/index.php?title=Red-Violet&action=edit&redlink=1) | Red | Violet |